Human Resources for Health

RESEARCH

Open Access

# Factors influencing medical disputes among village doctors from seven provinces in China: a cross-sectional study

Zijian Qi[1†], Guiyuan Li[1†], Wenxin Yu[1], Chunxia Miao[2], Wenjun Yan[1], Wei Wang[1,3], Xiuyin Gao[1,3*] and Qingzhi Wang[1,3*]

## Abstract

**Background** Medical disputes, with the progress of economic development and the improvement of people's awareness of rights protection, are becoming increasingly intense. This phenomenon may have a negative impact on doctors and the medical system, especially village doctors who are responsible for guarding the health of rural people. Therefore, it is urgent to explore the factors that affect the medical dispute experience of village doctors.

**Methods** A cross-sectional study was conducted and 1977 village doctors recruited from seven provinces in China during May to June 2023. Multivariate logistic regression with propensity score matching (PSM) was performed to explore the association of post competency and medical disputes.

**Results** Among the 1977 village doctors, 208 (10.5%) had experienced medical disputes. Village doctors with high post competency (OR = 0.951, 95%CI: 0.930, 0.972), proficient western medicine (OR = 0.340, 95%CI: 0.164, 0.704), neutral occupational satisfaction (OR = 0.344, 95%CI: 0.216, 0.550), and neutral or high satisfying doctor–patient relationship (DPR) (OR = 0.401, 95%CI: 0.240, 0.668; OR = 0.200, 95%CI: 0.113, 0.355) had a decreased likelihood for medical disputes. Village doctors with high income (OR = 4.928, 95%CI: 2.039, 11.911) had an increased likelihood for medical disputes.

**Conclusions** Village doctors who perceived themselves to have high service competency, high occupational satisfaction, and satisfaction with doctor–patient relationships were less likely to encounter medical disputes. The government and relevant organizations should intensify the training of village doctors, enhance their service competency and hospital facilities, foster harmonious doctor–patient relationships, and facilitate the advancement of primary public health services.

**Keywords** Medical disputes, Post competency, Village doctors, Rural China, Doctor–patient relationship

†Zijian Qi and Guiyuan Li contributed equally to this work.

*Correspondence:
Xiuyin Gao
100000401004@xzhmu.edu.cn
Qingzhi Wang
wangqz@xzhmu.edu.cn
Full list of author information is available at the end of the article

## Introduction

Medical disputes frequently arise from mismatched perceptions of treatment outcomes between patients (or their close relatives) and physicians (or medical institutions) [1]. This mismatch often stems from the inherent imbalance of information between patients and medical institutions during the diagnostic and treatment process. Patients, due to this informational asymmetry, often harbor unreasonable expectations toward medical institutions, anticipating outcomes that may not be feasible or realistic given the current medical capabilities and limitations. When these expectations are not met, patients may experience dissatisfaction, leading to disputes and, in some cases, even legal action. Medical disputes are typically categorized by damage and impacts of stakeholders into three levels: (1) Minor disputes, characterized by patients or their families expressing mild dissatisfaction with specific medical practices or outcomes during treatment. These disputes do not significantly disrupt the medical order. (2) Moderate disputes, involving more apparent errors or inappropriate behaviors in the medical process, such as the misuse of medications, without leading to severe consequences. These disputes may result in heightened emotional reactions from patients and their families, potentially interfering with the hospital's routine operations. (3) Severe disputes, representing the most critical level, often arising from medical accidents that cause serious injury or death. Such incidents can attract significant public attention, inflict substantial reputational damage on the hospital, and lead to legal actions [2, 3]. Therefore, medical disputes not only reflect patient dissatisfaction but also serve as a barometer for the quality of healthcare delivery, offering valuable insights into areas where improvements are needed to enhance patient satisfaction and the overall quality of medical services [4].

Medical disputes represent a formidable challenge globally, exerting both emotional and economic strains on healthcare systems [5]. In the United States, a recent study revealed that approximately 7.4% of physicians confronted medical disputes annually, with 1.6% resulting in claim that incur a mean payment of $274,887 [6]. Meanwhile, in China, the situation is equally concerning, with an estimated at least 420,000 patients succumbing to preventable medical errors each year [7]. Moreover, several studies have estimated that for every 1 RMB of medical malpractice compensation awarded, the indirect compensation costs could be six or seven times higher [8]. This staggering burden is compounded by the rapid escalation of medical disputes in China, particularly evident since the turn of the twenty-first century. According to data from the National Health Commission of China, outpatient visits across medical institutions reached 73 million in 2015, with approximately 70,000 cases ending in medical disputes [9], and this figure marks a significant increase from 17,243 cases reported in 2010 [10].

The surge in medical disputes not only strains healthcare resources but also exacerbates the already strained relationship between doctors and patients, deepening existing barriers to effective healthcare delivery. Addressing this escalating issue demands comprehensive strategies that prioritize patient safety, effective communication, and robust dispute resolution mechanisms to foster trust and cooperation between healthcare providers and patients.

Several studies examining the influencing factors of medical disputes have shed light on the multifaceted nature of these conflicts. It has been observed that medical disputes often stem from patients' misconceptions about treatments, concerns about medical quality, as well as deficiencies in communication skills and attitudes among medical staff [11–13]. These complexities underscore the need for a comprehensive understanding of the doctor–patient relationship (DPR), which has become a focal point of current research efforts. Indeed, many studies have centered on the perspective of medical workers and patients [14], particularly within large public hospitals endowed with abundant medical resources.

However, amidst this extensive focus, the crucial role played by village clinics (VCs) in rural healthcare systems has often been overlooked. Several studies conducted in Ghana and New Delhi, India, have reported higher levels of DPR with primary healthcare services in rural areas. This increased satisfaction is often attributed to factors such as easier access to care, shorter waiting times, and lower costs [15, 16]. However, in certain rural regions of Kuwait and China, despite the presence of these favorable conditions, the DPR has been found to be less harmonious. This issue has been associated with an increased incidence of medical disputes, often stemming from suboptimal communication between healthcare providers and patients or a lack of patience and empathy on the part of medical staff [17, 18]. Despite their limited resources, as the bottom of China's rural three-level medical and health system, VCs provide essential medical services to over 564 million rural residents [19], offering accessible, affordable, and safe healthcare alongside health education initiatives.

In recent years, media coverage of medical disputes in VCs has also been increasing. Yet, the dearth of research specifically examining medical disputes involving village doctors underscores a significant gap in current understanding, as the current situation of medical disputes in VCs lacks literature evidence. Consequently, efforts to comprehensively address the factors contributing to medical disputes must encompass the unique challenges and dynamics present within rural healthcare settings,

including the perspectives and experiences of village doctors. Such research endeavors can inform targeted interventions aimed at enhancing the quality of care, strengthening communication channels, and ultimately fostering trust and cooperation within rural healthcare systems.

## Methods

### Study design and participants

A cross-sectional survey was conducted between May and June, 2023. As shown in Fig. 1, multiple stage stratified sampling procedure was applied to recruit participants. First, we conducted this study in rural areas from seven provinces: Jiangsu, Shandong, Shanxi, Henan, Shaanxi, Inner Mongolia, and Gansu, which are located in eastern, central, and western China, respectively. Second, we randomly selected four counties within each province. Counties located in the central cities of provincial capitals (usually with higher levels of urbanization) are excluded. Third, we randomly selected three townships within each sampled county. Townships that housed the county seat (typically more urbanized) were

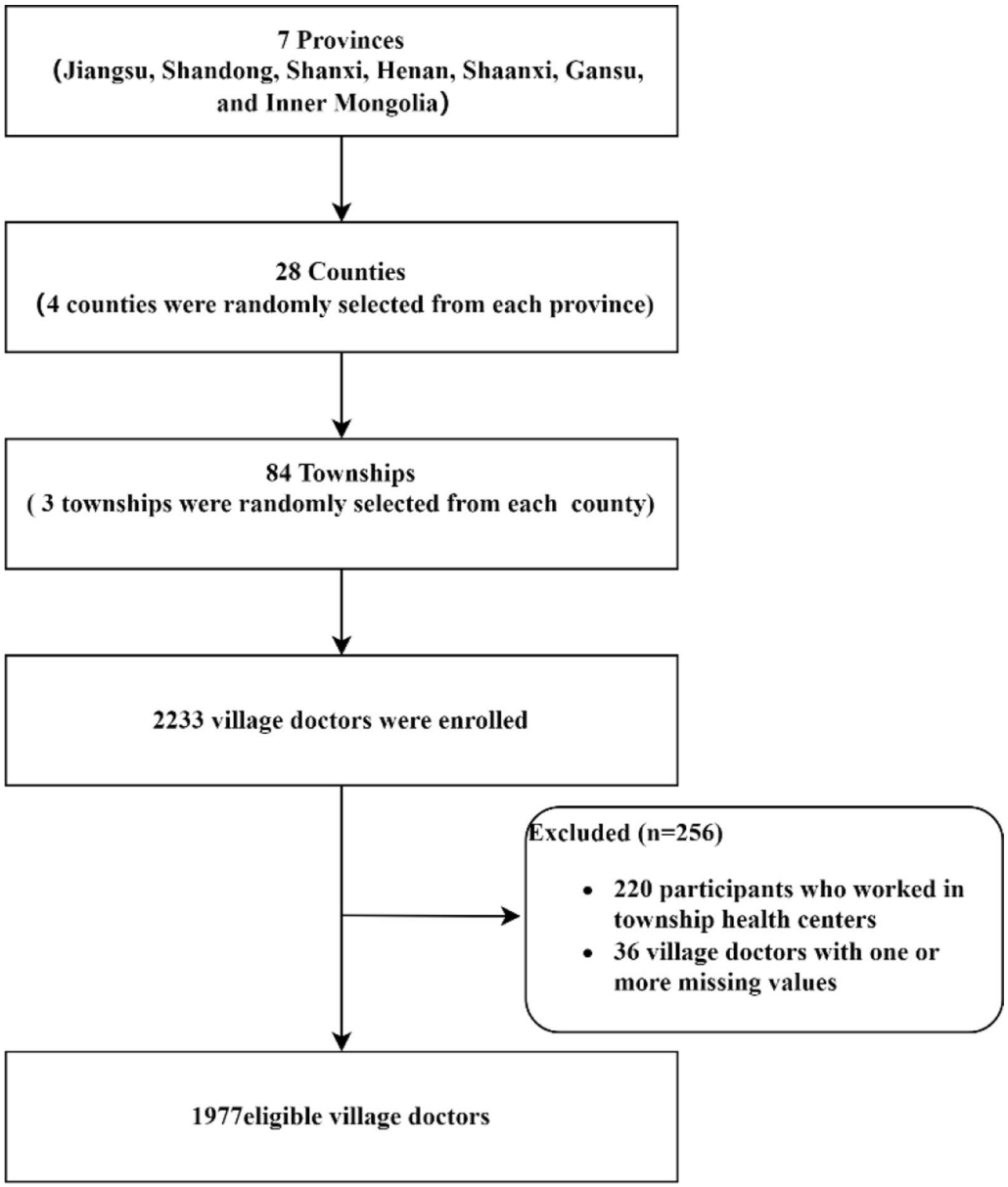


**Fig. 1** Flowchart

excluded. Finally, all village doctors, with more than 5 years of work experience, working in the sample township area were selected as participants. A total of 2233 village doctors provided informed consent and participated in this study. Out of 2233 eligible participants, 220 participants were excluded from the analysis population as they worked in township health centers and only provided temporary assistance in VCs. Additionally, 36 village doctors with one or more missing values were excluded from the analysis. The final analysis sample consisted of 1977 village doctors.

#### Development of the survey instrument

This survey instrument was developed based on our extensive literature review and two rounds of Delphi expert consultations. Firstly, we conducted a systematic literature search on PubMed, Web of Science, MEDLINE, China National Knowledge Infrastructure (CNKI), and Wanfang database, with search terms including Medical Disputes, Medical Discourses, Verbal, and Physical Violation. We summarized the influencing factors related to medical disputes from our searches. The initial version of the survey instrument was developed based on the above works. And then, 7 experts with professional backgrounds in hospital management, social medicine and health management, and medical law were invited to participate in two rounds of consultations. Experts evaluated the importance, operability, and sensitivity of each item in the survey instrument. The response rate for the two rounds of consultation is 100%, and the Kendall W coefficient for the first and second rounds of consultation was 0.64 ($\chi^2 = 18.619$, $P < 0.001$), indicating a certain degree of consistency among experts. In addition, we conducted a pre-test of the survey instrument before the survey begins to ensure its applicability and operability.

#### Measures

All participants were provided with the following definition of medical dispute at the beginning of the survey instrument to increase accuracy of self-reported responses, "patients or their family members who are dissatisfied with the services provided by the medical provider during the medical treatment process, resulting in disputes" [20]. We asked village doctors about their medical dispute experiences in the past year, mainly including verbal aggression, minor shoving, cyberbullying, physical assault, and door blocking interference, i.e., all disputes between doctors and patients (and/or their families) related to diagnosis and treatment.

Post competency was assessed by using Competency Scale for Rural Doctors [21], which provides a comprehensive evaluation of village doctors' practical performance. This scale includes 35 items in four constructs: clinical medical service ability, public health service ability, medical humanities practice ability, and education and comprehensive ability. Clinical medical service ability includes fundamental diagnostic and treatment skills and comprehensive medical service competency, forming the cornerstone of village doctors' practice. Public health service ability, focused on disease prevention and chronic disease management, distinguishes village doctors from public hospital clinicians. Medical humanities practice ability involves effective doctor–patient communication and professional demeanor to address emotional needs, reduce conflicts, and enhance care quality. Education and comprehensive ability, including learning and adaptability, enable village doctors to meet evolving professional demands and improve their competencies. Each item was evaluated using a 5-point Likert scale. The total score of post competency was a weighted cumulative score of four structures with different weight coefficients [21]. Finally, the weighted total score of post ability is 51, with higher score indicating greater post competency. In this study, the Cronbach's α coefficient was 0.987, indicating good reliability.

Covariates included the village doctors' gender, age, education level, marital status, health status, medical specialty, number of people covered, community activity, occupational satisfaction, work environment, DPR, continuing training, risk and legal training, and medical liability insurance.

#### Statistical analysis

Propensity score matching (PSM) was employed to equalize differences in confounding variables between participants with and without medical disputes, ensuring more accurate conclusions. Logit regression analysis was utilized to compute the propensity score for each participant taking into account confounding variables such as gender, age, education level, marital status, and health status. Matching was conducted at a 1:4 ratio, with a caliper width set at 0.02 of the standard deviation of the logit of the propensity score, using the nearest neighbor matching method.

Categorical variables are presented as frequencies and percentages (%), and Chi-square tests were applied to assess statistical differences between the two groups before and after PSM. Continuous variables are expressed as mean ± standard deviation (SD) and were compared between the groups using a two-sample t-test, both before and after PSM. Robustness checks were performed using a hierarchical regression model, incorporating variables that exhibited significance ($P < 0.05$) in bivariate analysis following PSM. Model 1 solely included post competency, while Model 2 also encompassed significant covariates identified in the bivariate analysis.

Statistical analyses were conducted using R software (version 4.3.2) and SPSS software (version 26.0), with a significance level of $P < 0.05$ (two sided) considered statistically significant.

## Results

### Participant characteristics by groups before propensity score matching

Table 1 displays the participant characteristics and post competency by groups before PSM. Among the 1977 village doctors surveyed, 208 (10.5%) reported having been involved in medical disputes within the past year. The majority, 1320 (66.8%), were male. Most doctors, 1694 (85.7%), fell within the age range of 41 to 60 years. The most common educational level among the participants was high school, representing 1329 (67.2%). The univariate analysis revealed that gender, health status, type of medical practice, income level, the number of people covered, occupational satisfaction, work environment satisfaction, DPR satisfaction, and post competency were significantly associated with medical disputes ($P < 0.05$).

### Univariate analysis after propensity score matching

After propensity score matching, a balance of confounding variables was achieved between the group of participants who had experienced medical disputes and those who had not (Figs. 2 and 3). The study population comprised 206 village doctors who had encountered medical disputes and 769 who had not after PSM. The univariate analysis conducted after propensity score matching is presented in Table 2. This table reveals that several factors, including the type of medical practice, income level, occupational satisfaction, satisfaction with the work environment, satisfaction with the DPR, and post competency, exhibited significant differences ($P < 0.05$) between the two groups.

### Factor of medical disputes through hierarchical regression analysis

Table 3 shows the factors of medical disputes by hierarchical regression analysis. In Model 1, when we solely included post competency in the logistic regression analysis, the results indicated that having a high post competency served as a protective factor of medical disputes (OR = 0.951, 95% CI: 0.930, 0.972). In Model 2, we expanded the analysis by incorporating other covariates from Table 2 that were found to be associated with medical disputes. The results revealed that, in addition to high post competency (OR = 0.966, 95% CI: 0.940, 0.993), several other factors also decreased the likelihood of medical disputes. These included proficiency in western medicine (OR = 0.340, 95% CI: 0.164, 0.704), neutral occupational satisfaction (OR = 0.344, 95% CI: 0.216, 0.550), and neutral or high satisfaction with the DPR (OR = 0.401, 95% CI: 0.240, 0.668 for neutral satisfaction; OR = 0.200, 95% CI: 0.113, 0.355 for high satisfaction). However, there was one factor that increased the likelihood of medical disputes: having a high income (OR = 4.928, 95% CI: 2.039, 11.911).

## Discussion and conclusion

In this study, we explored the effect of post competency on experience of medical disputes among village doctors through a large cross-sectional survey using propensity score matching. To the best of our knowledge, a few studies have explored the factors associated with medical disputes among village doctors. Our main findings suggest that village doctors with high post competency are less likely to suffer medical disputes. And, we also found that good at western medicine, high occupational satisfaction, high satisfaction with the DPR, village doctors are less likely to encounter medical disputes. However, high income level is a risk factor for village doctors to encounter medical disputes.

Out of the village doctors who participated in the survey, approximately 10.5% stated that they had been entangled in medical disputes during the preceding year. This percentage is notably lower in comparison to the findings presented by Wu et al. [14], which indicated that a startling 33.48% of the 22,213 doctors working in 144 tertiary public hospitals situated across 31 provinces throughout China had encountered medical disputes. The village doctors, who reside alongside the villagers in the rural communities, enjoy a unique bond with their patients. This bond is forged through the shared experiences of diagnosis and treatment, where mutual trust and participation are fostered. The deep-rooted ties that bind the villagers—whether through neighborly relations, familial connections, or friendships—further strengthen this relationship. These ties ensure seamless communication, mutual respect, and a close-knit interpersonal dynamic that is often lacking in the increasingly complex and tense DPR found in urban settings [1]. During our interviews with the task force, the village doctors emphasized that their familiarity with the villagers' way of life and circumstances adds to the trust they enjoy. As members of the same community, the villagers hold the village doctors in high esteem and regard them as trusted advisers. Consequently, conflicts or disputes between the village doctors and their patients are rare occurrences. In fact, the doctors reported never encountering such incidents and were unaware of any such cases within their community. This harmonious DPR in the VC stands in stark contrast to the challenges faced by medical professionals in urban hospitals.

**Table 1** Socio-demographic characteristics and key variables of participants

| Characteristic | Total | Medical disputes | | Statistics | |
|---|---|---|---|---|---|
| | (*N* = 1977) | Yes (*n* = 208) | No (*n* = 1769) | $\chi^2$/t | *P* |
| Gender (*n*, %) | | | | 8.855 | 0.003** |
| Male | 1320 (66.8) | 158 (76.0) | 1162 (65.7) | | |
| Female | 657 (33.2) | 50 (24.0) | 607 (34.3) | | |
| Age (*n*, %) | | | | 2.650 | 0.618 |
| ≤ 30 | 15 (0.8) | 3 (1.4) | 12 (0.7) | | |
| 31–40 | 166 (8.4) | 14 (6.7) | 152 (8.6) | | |
| 41–50 | 912 (46.1) | 101 (48.6) | 811 (45.8) | | |
| 51–60 | 782 (39.6) | 79 (38) | 703 (39.7) | | |
| ≥ 61 | 102 (5.2) | 11 (5.3) | 91 (5.1) | | |
| Education level (*n*, %) | | | | 3.958 | 0.412 |
| Middle school or below | 79 (4.0) | 5 (2.4) | 74 (4.2) | | |
| Junior high school | 1329 (67.2) | 133 (63.9) | 1196 (67.6) | | |
| Tertiary college | 472 (23.9) | 57 (27.4) | 415 (23.5) | | |
| Bachelor degree or above | 97 (4.9) | 13 (6.3) | 84 (4.7) | | |
| Marital status (*n*, %) | | | | 0.382 | 0.537 |
| Single | 93 (4.7) | 8 (3.8) | 85 (4.9) | | |
| Married | 1884 (95.3) | 200 (96.2) | 1684 (84.6) | | |
| Health status (*n*, %) | | | | 7.961 | 0.019* |
| Good | 1297 (65.6) | 120 (57.7) | 1177 (66.5) | | |
| General | 576 (29.1) | 71 (34.1) | 505 (28.5) | | |
| Poor | 104 (5.3) | 17 (8.2) | 87 (4.9) | | |
| Type of medical practice (*n*, %) | | | | 13.153 | 0.001** |
| Traditional Chinese medicine | 85 (4.3) | 16 (7.7) | 69 (3.9) | | |
| Western medicine | 788 (39.9) | 63 (30.3) | 725 (41) | | |
| Traditional Chinese & Western medicine | 1104 (55.8) | 129 (62) | 975 (55.1) | | |
| Income level (*n*, %) | | | | 34.078 | < 0.001*** |
| High | 40 (2.0) | 15 (7.2) | 25 (1.4) | | |
| General | 664 (33.6) | 56 (26.9) | 608 (34.4) | | |
| Low | 1273 (64.4) | 137 (65.9) | 1136 (64.2) | | |
| Number of people covered (*n*, %) | | | | 11.687 | 0.02* |
| ≤ 500 | 130 (6.6) | 5 (2.4) | 125 (7.1) | | |
| 501–1000 | 432 (21.9) | 50 (24) | 382 (21.6) | | |
| 1001–2000 | 729 (36.9) | 74 (35.6) | 655 (37) | | |
| 2001–3000 | 450 (22.8) | 44 (21.2) | 406 (23) | | |
| ≥ 3001 | 236 (11.9) | 35 (16.8) | 201 (11.4) | | |
| Community activity (*n*, %) | | | | 5.787 | 0.055 |
| Yes | 488 (24.7) | 45 (21.6) | 443 (25.0) | | |
| General | 846 (42.8) | 80 (38.5) | 766 (43.3) | | |
| No | 643 (32.5) | 83 (39.9) | 560 (31.7) | | |
| Occupational satisfaction (*n*, %) | | | | 45.839 | < 0.001*** |
| Dissatisfaction | 302 (15.3) | 65 (31.3) | 237 (13.4) | | |
| Neutral | 1083 (54.8) | 92 (44.2) | 991 (56.0) | | |
| Satisfaction | 592 (29.9) | 51 (24.5) | 541 (30.6) | | |
| Work environment satisfaction (*n*, %) | | | | 18.200 | < 0.001*** |
| Dissatisfaction | 269 (13.6) | 43 (20.7) | 226 (12.8) | | |
| Neutral | 1004 (50.8) | 115 (55.3) | 889 (50.3) | | |
| Satisfaction | 704 (35.6) | 50 (24) | 654 (37) | | |
| Doctor–patient relationship satisfaction (*n*, %) | | | | 91.769 | < 0.001*** |

**Table 1** (continued)

| Characteristic | Total | Medical disputes | | Statistics | |
|---|---|---|---|---|---|
| | (*N* = 1977) | Yes (*n* = 208) | No (*n* = 1769) | $\chi^2$/t | *P* |
| Dissatisfaction | 141 (7.1) | 45 (21.6) | 96 (5.4) | | |
| Neutral | 948 (48.0) | 112 (53.8) | 836 (47.3) | | |
| Satisfaction | 888 (44.9) | 51 (24.5) | 837 (47.3) | | |
| Turnover intention (*n*, %) | | | | 30.293 | < 0.001*** |
| Yes | 927 (46.9) | 135 (64.9) | 792 (44.8) | | |
| No | 1050 (63.1) | 73 (35.1) | 977 (55.2) | | |
| Continuing training (*n*, %) | | | | 0.258 | 0.627 |
| Yes | 1930 (97.6) | 202 (97.1) | 1728 (97.7) | | |
| No | 47 (2.4) | 6 (2.9) | 41 (2.3) | | |
| Risk and legal training (*n*, %) | | | | 1.860 | 0.173 |
| Yes | 1133 (57.3) | 110 (52.9) | 1023 (57.8) | | |
| No | 844 (42.7) | 98 (47.1) | 746 (42.2) | | |
| Medical liability insurance (*n*, %) | | | | 0.225 | 0.635 |
| Yes | 1091 (55.2) | 118 (56.7) | 973 (55) | | |
| No | 886 (44.8) | 90 (43.3) | 796 (45) | | |
| Post competency (mean ± SD) | 41.56 ± 7.43 | 39.31 ± 7.64 | 41.83 ± 7.00 | 23.563 | < 0.001*** |

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$

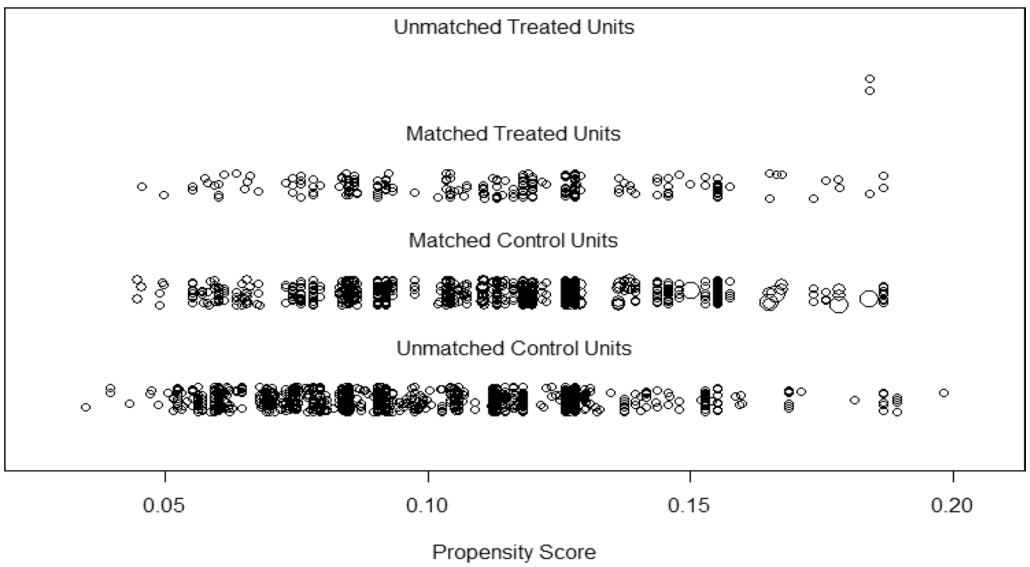


**Fig. 2** Distribution of Propensity Scores

Our study has revealed that, despite the fact that the incidence of medical disputes in VCs is relatively low, the DPR within these settings remains notably harmonious. However, it is also important to recognize that the post competency of village doctors plays a pivotal role in maintaining this harmony. Specifically, our findings indicate that village doctors who possess a high level of post competency are less likely to encounter medical disputes. This finding has not been reported in previous studies [3, 22], mainly because, to the best of our knowledge, our study is the first to explore the relationship between village doctors' post competency and medical disputes. This protective factor is crucial in preserving the trust and respect that characterizes the DPR in rural communities. In addition, our study found that the village doctor's post competency score was around 40 (weighted total score was 51), meaning that the village doctor possesses less than 80% of the desired service ability. This observation

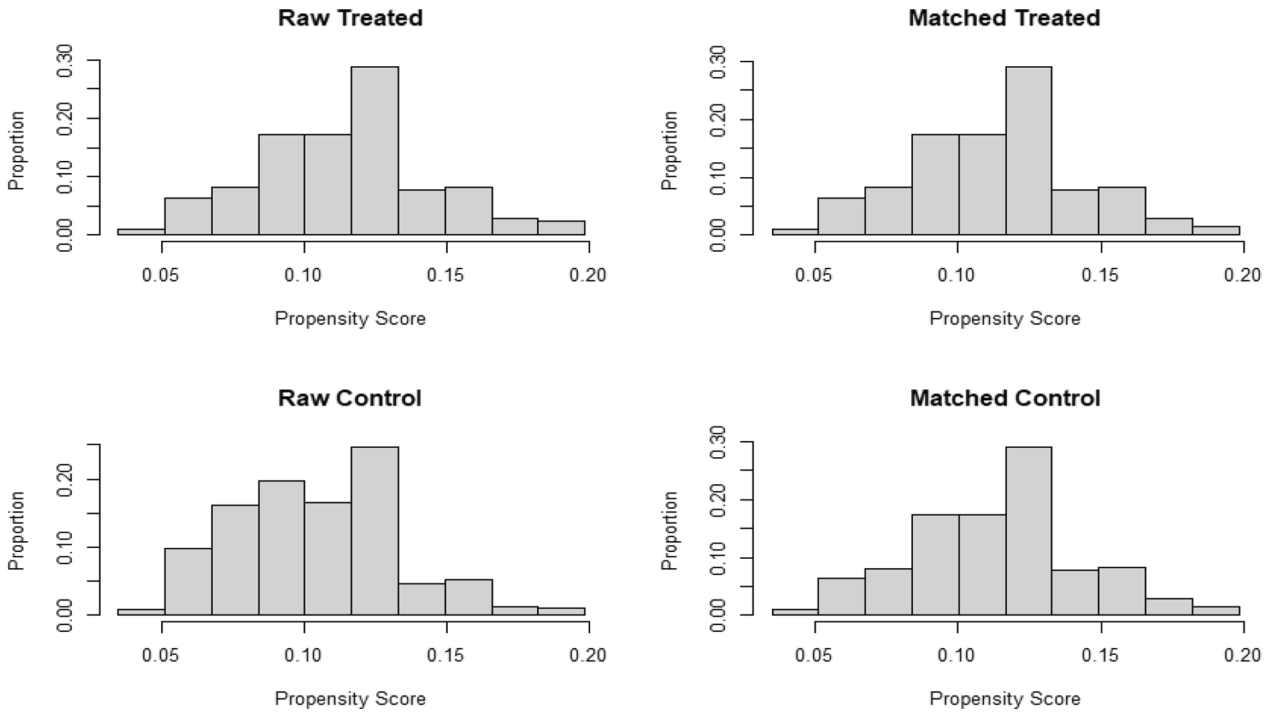


**Fig. 3** Histogram of differences in variables before and after PSM

suggests that there is still room for improvement in the village doctor's service delivery capabilities. It is important to note that the service ability of village doctors plays a crucial role in providing healthcare to rural communities, and thus, it is essential to identify areas for improvement and take necessary measures to enhance their capabilities. This could include providing additional training, resources, and support to village doctors to help them better serve their patients and communities. By enhancing the service competency of village doctors, we can further strengthen the already strong bonds between medical professionals and their patients in these settings.

Interestingly, our study found that village doctors who specialize in western medicine are less likely to have medical disputes than traditional Chinese medicine. This finding is intriguing given the historical context of medical development. Traditionally, Chinese medicine evolved through empirical practice, focusing on holistic healing and gradual conditioning of the body [23]. Western medicine, on the other hand, has leaned heavily on scientific advancements and technological innovations, resulting in a more standardized and quantifiable approach to healthcare [24]. In contemporary times, western medicine relies heavily on extensive experimental data, ensuring rapid and efficient outcomes. This precision and predictability likely contribute to the reduced likelihood of medical disputes among western medicine practitioners in rural areas. Conversely, traditional Chinese medicine often emphasizes long-term conditioning and gradual improvement, which may not yield immediate visible results. This slower pace of treatment and more subjective approach to healing could potentially lead to increased misunderstandings and disputes between patients and practitioners. As western medicine continues to gain popularity and acceptance in rural areas, it is becoming increasingly apparent that its scientific foundation and quantifiable outcomes contribute to a smoother DPR, thereby reducing the incidence of medical disputes. This finding is not only a testament to the progress of western medicine but also highlights the need for traditional Chinese medicine to adapt and evolve to meet the changing needs and expectations of modern healthcare.

Different from other studies [25, 26], this study showed that high income is associated with high medical disputes. This may sound like a difficult conclusion to understand, because many studies have shown that dissatisfaction with income, among both doctors and patients, was associated with worse DPR [27] and medical disputes. However, different from doctors in Township Health Centers (THC) and large public hospitals, village doctors in China have no fixed working hours and often work when there are patients [28]. They rarely have fixed salaries or performance, and their income is often linked to the number of patients. Therefore, the higher the income of village doctors, the more patients they treat, and the higher the probability of encountering

**Table 2** Socio-demographic characteristics and key variables of participants after PSM

| Variables | Medical disputes | | Statistics | |
|---|---|---|---|---|
| | Yes (n = 206) | No (n = 769) | $\chi^2$/t | P |
| Gender (*n*, %) | | | 0.102 | 0.750 |
| Male | 156 (75.7) | 574 (74.6) | | |
| Female | 50 (24.3) | 195 (25.4) | | |
| Age (*n*, %) | | | 0.341 | 0.952 |
| ≤ 40 | 17 (8.3) | 56 (7.3) | | |
| 41–50 | 101 (49.0) | 385 (50.1) | | |
| 51–60 | 77 (37.4) | 291 (37.8) | | |
| ≥ 61 | 11 (5.3) | 37 (4.8) | | |
| Education level (*n*, %) | | | 1.551 | 0.671 |
| Middle school or below | 5 (2.4) | 28 (3.6) | | |
| Junior high school | 133 (64.6) | 514 (66.8) | | |
| Tertiary college | 57 (27.7) | 193 (25.1) | | |
| Bachelor degree or above | 11 (5.3) | 34 (4.4) | | |
| Marital status (*n*, %) | | | 0.748 | 0.387 |
| Single | 8 (3.9) | 21 (2.7) | | |
| Married | 198 (96.1) | 748 (97.3) | | |
| Health status (*n*, %) | | | 4.505 | 0.105 |
| Good | 120 (58.3) | 497 (64.6) | | |
| General | 70 (34.0) | 236 (30.7) | | |
| Poor | 16 (7.8) | 36 (4.7) | | |
| Type of medical practice (*n*, %) | | | 9.463 | 0.009* |
| Traditional Chinese medicine | 16 (7.8) | 30 (3.9) | | |
| Western medicine | 63 (30.6) | 305 (39.7) | | |
| Traditional Chinese & Western medicine | 127 (61.7) | 434 (56.4) | | |
| Income level (*n*, %) | | | 19.199 | < 0.001* |
| High | 15 (7.3) | 14 (1.8) | | |
| Neutral | 55 (26.7) | 263 (34.2) | | |
| Low | 136 (66.0) | 492 (64.0) | | |
| Number of people covered (*n*, %) | | | 9.043 | 0.06 |
| ≤ 500 | 5 (2.4) | 51 (6.6) | | |
| 501–1000 | 50 (24.3) | 166 (21.6) | | |
| 1001–2000 | 73 (35.4) | 293 (38.1) | | |
| 2001–3000 | 43 (20.9) | 167 (21.7) | | |
| ≥ 3001 | 35 (17.0) | 92 (12.0) | | |
| Community activity (*n*, %) | | | 4.685 | 0.096 |
| Yes | 45 (21.8) | 188 (24.5) | | |
| General | 80 (38.8) | 340 (44.2) | | |
| No | 81 (39.3) | 241 (31.3) | | |
| Occupational satisfaction (*n*, %) | | | 43.157 | < 0.001* |
| Dissatisfaction | 65 (31.5) | 96 (12.5) | | |
| Neutral | 90 (43.7) | 447 (58.1) | | |
| Satisfaction | 51 (24.8) | 226 (29.4) | | |
| Work environment satisfaction (*n*, %) | | | 16.894 | < 0.001* |
| Dissatisfaction | 42 (20.4) | 92 (12.0) | | |
| Neutral | 114 (55.3) | 391 (50.8) | | |
| Satisfaction | 50 (24.3) | 286 (37.2) | | |
| Doctor–patient relationship satisfaction (*n*, %) | | | 65.568 | < 0.001* |
| Dissatisfaction | 44 (21.4) | 43 (5.6) | | |

**Table 2** (continued)

| Variables | Medical disputes | | Statistics | |
|---|---|---|---|---|
| | Yes (n = 206) | No (n = 769) | $\chi^2$/t | P |
| Neutral | 111 (53.9) | 365 (47.5) | | |
| Satisfaction | 51 (24.8) | 361 (46.9) | | |
| Turnover intention (*n*, %) | | | 25.567 | < 0.001* |
| Yes | 133 (64.6) | 344 (44.7) | | |
| No | 73 (35.4) | 425 (55.3) | | |
| Continuing training (*n*, %) | | | 0.348 | 0.555 |
| Yes | 200 (97.1) | 752 (97.8) | | |
| No | 6 (2.9) | 17 (2.2) | | |
| Risk and legal training (*n*, %) | | | 1.201 | 0.273 |
| Yes | 108 (52.4) | 436 (56.7) | | |
| No | 98 (47.6) | 333 (43.3) | | |
| Medical liability insurance (*n*, %) | | | 1.431 | 0.232 |
| Yes | 116 (56.3) | 397 (51.6) | | |
| No | 90 (43.7) | 372 (48.4) | | |
| Post competency (mean ± SD) | 39.34 ± 7.65 | 41.91 ± 6.93 | 21.404 | < 0.001*** |

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$

**Table 3** Influencing factors of multivariate regression of medical disrupts model after PSM

| Medical Disputes | Model 1 | Model 2 |
|---|---|---|
| Post competency | 0.951 (0.930,0.972)*** | 0.966 (0.940,0.993)* |
| Type of medical practice | | |
| Traditional Chinese medicine | | Ref |
| Western medicine | | 0.340 (0.164,0.704)** |
| Traditional Chinese & Western medicine | | 0.530 (0.264,1.066) |
| Income level | | |
| Low | | Ref |
| Average | | 1.239 (0.827,1.856) |
| High | | 4.928 (2.039,11.911)*** |
| Occupational satisfaction | | |
| Dissatisfaction | | Ref |
| Average | | 0.344 (0.216,0.550)*** |
| Satisfaction | | 0.603 (0.327,1.110) |
| Work environment satisfaction | | |
| Dissatisfaction | | Ref |
| Average | | 1.330 (0.799, 2.215) |
| Satisfaction | | 0.814 (0.430, 1.541) |
| Doctor–patient relationship | | |
| Dissatisfaction | | Ref |
| Average | | 0.401 (0.240, 0.668)*** |
| Satisfaction | | 0.200 (0.113, 0.355)*** |
| Turnover intention | | |
| Yes | | 1.588 (1.083, 2.327)* |
| No | | Ref |

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$

medical disputes. An increase in patients inevitably leads to a substantial rise in the demand for medical services and workloads. This heightened demand can gradually erode village doctors' patience and empathy, adversely affecting the duration and quality of consultations and doctor–patient communication [29, 30]. Such challenges may contribute to patient dissatisfaction and, in some cases, escalate into doctor–patient conflicts. Moreover, the high-intensity work environment faced by village doctors often results in physical exhaustion and heightened psychological stress, which can compromise professional performance and the quality of medical care, thereby increasing the likelihood of medical errors and exacerbating the risk of disputes [31, 32]. It is also important to note that village doctors with higher income is frequently perceived by patients as providers of higher quality medical services. This perception often elevates patient expectations regarding the standard of care they anticipate receiving. When these heightened expectations are not met, patients may experience dissatisfaction [33], which could manifest as complaints, grievances, or even disputes. In addition, village doctors rarely have administrative staff, and village doctors are their own administrative staff, so they have to negotiate or ask a third party to handle disputes.

Our study found that harmonious DPR can significantly reduce the occurrence of medical disputes. The DPR is the interactive relationship in the medical service activities between doctors and patients, as well as between the individuals and social groups that are closely related to the interests of both parties [34]. Several studies reported that harmonious DPR can promote social harmony, and trusting relationship can improve patients' ability to cope with disease [35–37]. On the contrary, from patients' perspective, poor DPR may lead to patients' distrust of doctors, and even lead to mental damage, which is not conducive to the treatment and rehabilitation of patients' diseases. The DPR between village doctors and patients is equally important, which is not only a problem unique to large public hospitals, it is a common problem. Previous study showed that DPR is seen as the behavior and attitude of the doctor toward the patient, and the perception of the patient concerning the caring shown by the doctor [38]. If doctors can be more patient and tolerant of the patients' talk and behavior, it will send a signal of goodwill that patients can accept and perceive, and even respond. This will have a positive impact on the next step of treatment and can improve treatment efficiency, which is exactly what both doctors and patients need.

This study showed that higher occupational satisfaction was significantly linked with lower medical disputes, which was in line with other studies [39, 40] and empirical evidence. A study found that the threat of malpractice was negatively associated with psychiatrists' occupational satisfaction [39]. Job satisfaction is a multifaceted concept that is influenced by numerous factors, including colleague communication, income level, and other variables. It reflects an individual's overall sentiment toward their work. For doctors, job satisfaction frequently correlates with medical disputes. In this context, job satisfaction is not solely concerned with doctors or hospitals; it also encompasses higher patient satisfaction and a reduction in medical disputes [41]. Furthermore, our study revealed that before and after the PSM, 46.9% and 48.9% of village doctors expressed intentions to leave their positions, respectively. Notably, doctors who harbored such turnover intentions often experienced a higher frequency of medical disputes. This finding aligns with previous research, which indicates that many general practitioners are grappling with unmanageable workloads and increasing administrative demands, among other challenges [42]. Village doctors are similarly situated and often contemplate resigning as a means of escape. Under such excessive pressure, medical disputes become an inevitable occurrence.

#### Strengths and limitations

Our research offers valuable insights into the factors that influence medical disputes among village doctors and the intricate relationship between their post competency and these disputes. To the best of our knowledge, our study stands out as one of the pioneers in exploring this relationship and the first to adopt such a comprehensive approach. Consequently, our findings enrich the limited evidence on this subject. However, it is important to acknowledge that our study has certain limitations. Firstly, as with most cross-sectional studies, establishing a causal relationship between medical disputes and post competency remains challenging. Secondly, the medical dispute cases examined in this study were self-reported by village doctors, which may have introduced a Hawthorne effect, potentially skewing the results. Thirdly, although we have adjusted for certain confounding factors, there may still be unknown variables such as patient health literacy that could influence our findings. Fourthly, based on the limited insight of village doctors without experience, this study included only village doctors with at least five years of experience, potentially limiting its comprehensiveness by excluding insights from newer practitioners. Despite these limitations, our study provides a foundation for future research and offers valuable insights for improving the quality of healthcare services in rural areas.

### Practical implications

We recommend that the Chinese government further enhances its financial investment and allocation of resources to VCs, with a focus on strengthening infrastructure development to comprehensively improve the primary healthcare environment. Additionally, the duration of communication during consultations in VCs should be clearly defined and appropriately extended to enhance the quality of medical services and foster a harmonious DPR, simultaneously, strengthening village doctors' post competency through training programs, such as case studies and scenario-based simulations, to improve their communication and conflict resolution abilities. These findings can also be extended to other rural areas in developing countries.

## Conclusion

In general, we found that nearly one-tenth participants reported experiencing medical disputes, and this issue still needs more attention. Our main findings suggest that village doctors with high post competency are less likely to encounter medical disputes. And, we also found that good at western medicine, high occupational satisfaction, high satisfaction with the DPR, and village doctors are less likely to encounter medical disputes. However, high income level is a risk factor for village doctors to encounter medical disputes.

#### Acknowledgements

We thank Dr. Yong Jiao for his support and assistance in managing the project. We thank the village doctors for willing to participate in our research.

#### Author contributions

Z.Q., G.L, and W.Y. collected the data, analyzed and interpreted the data, and wrote the manuscript. W.Y., W.W. and C.M. revised the manuscript. X.G. and Q.W. wrote the manuscript, revised the manuscript, designed and supervised the project. All authors reviewed and approved the final manuscript.

#### Funding

The authors are supported by the National Social Science Foundation of China [19BGL251].

#### Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Declarations

#### Ethics approval and consent to participate

This study was approved by the Ethics Committee of Xuzhou Medical University and it was conducted in accordance with the Declaration of Helsinki. All participants understood the research purpose, process, potential risks, and benefits, and they agreed to participate in this study by providing written informed consent.

#### Consent for publication

Not applicable.

#### Competing interests

The authors declare no competing interests.

#### Author details

[1]Department of Community and Health Education, School of Public Health, Xuzhou Medical University, Xuzhou, China. [2]Department of Health Management, School of Management, Xuzhou Medical University, Xuzhou, China. [3]Center for Medical Statistics and Data Analysis, Xuzhou Medical University, Xuzhou, China.

Received: 25 April 2024 Accepted: 4 March 2025
Published online: 13 March 2025

#### References

1. Yu F, Xie X, Ding F, Xue C, Sun Z. Changing procedures for resolving medical disputes in China. Intern Med J. 2018;48:1552–3.
2. Jiajian Chen QZ. Reserch on the "graded response" mechanism of local government in handing social contradictions——a case study of medical disputes in M City. J Public Adm. 2019;12(03):85–103.
3. Liu Y, Wang P, Bai Y. The influence factors of medical disputes in Shanghai and implications—from the perspective of doctor, patient and disease. BMC Health Serv Res. 2022;22:1128.
4. Wang M, Zhao H, Tang C, Sun Y, Liu GG. A taxonomy of Chinese hospitals and application to medical dispute resolutions. Sci Rep. 2022;12:18234.
5. Gao P, Li X, Zhao Z, Zhang N, Ma K, Li L. Diagnostic errors in fatal medical malpractice cases in Shanghai, China: 1990–2015. Diagn Pathol. 2019;14:8.
6. Jena AB, Seabury S, Lakdawalla D, Chandra A. Malpractice risk according to physician specialty. N Engl J Med. 2011;365:629–36.
7. He F, Li L, Bynum J, Meng X, Yan P, Li L, Liu L. Medical Malpractice in Wuhan, China: a 10-year autopsy-based single-center study. Medicine (Baltimore). 2015;94: e2026.
8. Li H, Wu X, Sun T, Li L, Zhao X, Liu X, Gao L, Sun Q, Zhang Z, Fan L. Claims, liabilities, injures and compensation payments of medical malpractice litigation cases in China from 1998 to 2011. BMC Health Serv Res. 2014;14:390.
9. According to the National Planning Commission statistics: last year there were 70000 medical disputes, medical problem is particularly prominent. http://www.news.cn/.
10. Chinese increased 7000 medical trouble event in 5 years. 2013. http://politics.people.com.cn/n/2014/0306/c70731-24552070.html.
11. Liu Z, Zhang Y, Asante JO, Huang Y, Wang X, Chen L. Characteristics of medical disputes arising from dental practice in Guangzhou, China: an observational study. BMJ Open. 2018;8: e018738.
12. Ma Y, Wang L, Wang Y, Li Z, Zhang Y, Fan L, Ni X. Causes of hospital violence, characteristics of perpetrators, and prevention and control measures: a case analysis of 341 serious hospital violence incidents in China. Front Public Health. 2021;9: 783137.
13. Mangalmurti SS, Harold JG, Parikh PD, Flannery FT, Oetgen WJ. Characteristics of medical professional liability claims against internists. JAMA Intern Med. 2014;174:993–5.
14. Wu Y, Jiang F, Ma J, Tang YL, Wang M, Liu Y. Experience of medical disputes, medical disturbances, verbal and physical violence, and burnout among physicians in China. Front Psychol. 2020;11: 556517.
15. Yaya S, Bishwajit G, Ekholuenetale M, Shah V, Kadio B, Udenigwe O. Urban-rural difference in satisfaction with primary healthcare services in Ghana. BMC Health Serv Res. 2017;17:776.
16. Rasheed N, Arya S, Acharya A. Client satisfaction and perceptions about quality of health care at a primary health centre of Delhi, India. Indian J Community Health. 2012;24:237–42.
17. Alhashem AM, Alquraini H, Chowdhury RI. Factors influencing patient satisfaction in primary healthcare clinics in Kuwait. Int J Health Care Qual Assur. 2011;24:249–62.
18. Gao Q, Zhang B, Zhou Q, Lei C, Wei X, Shi Y. The impact of provider-patient communication skills on primary healthcare quality and patient satisfaction in rural China: insights from a standardized patient study. BMC Health Serv Res. 2024;24:579.
19. National Bureau of Statistics of China. China Statistical Yearbook 2018. Beijing: China Statistics Press; 2019. https://www.stats.gov.cn/sj/ndsj/2018/indexeh.htm.

20. State Council of the PRC (2018). Regulations on Prevention and Handling of Medical Disputes [Online]. Beijing: The Central People's Government of the People's Republic of China. https://pkulaw.com/en_law/073e30622ce3e9d9bdfb.html.
21. Li M, Dong YQ, Li N, et al. Construction of the post competency model of rural dotors in Beijing. Chin J General Practice. 2023;14(01):1–5.
22. Amirthalingam K. Medical dispute resolution, patient safety and the doctor-patient relationship. Singapore Med J. 2017;58:681–4.
23. Matos LC, Machado JP, Monteiro FJ, Greten HJ. Understanding traditional Chinese medicine therapeutics: an overview of the basics and clinical applications. Healthcare (Basel). 2021;9:257.
24. Zhang JH, Wu MS, Wang YF, Jia YM, Li E. Medicine in future and advantages of integrated Chinese and western medicine. Chin J Integr Med. 2019;25:87–90.
25. Cheng ZWJ, Liu X. The key influencing factor of doctor-patient relationship: interest demand of patients. ACTA Univ Med Nanjing (Social Sciences). 2014;61(2):121–4.
26. Ma L, Su W. Analysis of the countermeasures and awareness of the doctor-patient relationship. Modern Preventive Med. 2011;38(10):1861–3.
27. Qiao T, Fan Y, Geater AF, Chongsuvivatwong V, McNeil EB. Factors associated with the doctor-patient relationship: doctor and patient perspectives in hospital outpatient clinics of Inner Mongolia Autonomous Region, China. Patient Prefer Adherence. 2019;13:1125–43.
28. Zhang X, Bian L, Bai X, Kong D, Liu L, Chen Q, Li N. The influence of job satisfaction, resilience and work engagement on turnover intention among village doctors in China: a cross-sectional study. BMC Health Serv Res. 2020;20:283.
29. Salisbury C, Procter S, Stewart K, Bowen L, Purdy S, Ridd M, Valderas J, Blakeman T, Reeves D. The content of general practice consultations: cross-sectional study based on video recordings. Br J Gen Pract. 2013;63:e751-759.
30. Wilson A, Childs S. The relationship between consultation length, process and outcomes in general practice: a systematic review. Br J Gen Pract. 2002;52:1012–20.
31. Mul Fedele ML, López Gabeiras MP, Simonelli G, Diez JJ, Bellone GJ, Cagliani J, Larrateguy L, Eiguchi K, Golombek DA, Cardinali DP, et al. Multivariate analysis of the impact of sleep and working hours on medical errors: a MICE approach. BMC Public Health. 2023;23:2317.
32. Tawfik DS, Profit J, Morgenthaler TI, Satele DV, Sinsky CA, Dyrbye LN, Tutty MA, West CP, Shanafelt TD. Physician burnout, well-being, and work unit safety grades in relationship to reported medical errors. Mayo Clin Proc. 2018;93:1571–80.
33. Pan J, Liu D, Ali S. Patient dissatisfaction in China: what matters. Soc Sci Med. 2015;143:145–53.
34. Sang T, Zhou H, Li M, Li W, Shi H, Chen H, Zhou H. Investigation of the differences between the medical personnel's and general population's view on the doctor-patient relationship in China by a cross-sectional survey. Global Health. 2020;16:99.
35. Banerjee A, Sanyal D. Dynamics of doctor-patient relationship: a cross-sectional study on concordance, trust, and patient enablement. J Family Community Med. 2012;19:12–9.
36. Mendoza MD, Smith SG, Eder MM, Hickner J. The seventh element of quality: the doctor-patient relationship. Fam Med. 2011;43:83–9.
37. Werther JR. Focus on doctor-patient relationship the secret to practice success. Tenn Med. 2010;103:9.
38. de Waard CS, Poot AJ, den Elzen WPJ, Wind AW, Caljouw MAA, Gussekloo J. Perceived doctor-patient relationship and satisfaction with general practitioner care in older persons in residential homes. Scand J Prim Health Care. 2018;36:189–97.
39. DeMello JP, Deshpande SP. Career satisfaction of psychiatrists. Psychiatr Serv. 2011;62:1013–8.
40. Leigh JP, Tancredi DJ, Kravitz RL. Physician career satisfaction within specialties. BMC Health Serv Res. 2009;9:166.
41. Jiang F, Hu L, Rakofsky J, Liu T, Wu S, Zhao P, Hu G, Wan X, Liu H, Liu Y, Tang YL. Sociodemographic characteristics and job satisfaction of psychiatrists in China: results from the first nationwide survey. Psychiatr Serv. 2018;69:1245–51.
42. Long L, Moore D, Robinson S, Sansom A, Aylward A, Fletcher E, Welsman J, Dean SG, Campbell JL, Anderson R. Understanding why primary care doctors leave direct patient care: a systematic review of qualitative research. BMJ Open. 2020;10: e029846.


## Publisher's Note