RESEARCH ARTICLE

Analysis of influencing factors of nurse-patient disputes based on patient characteristics: A cross-sectional study

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Abstract

Aim: To explore the prevalence of nurse-patient disputes and the influencing factors based on an analysis of patient characteristics.

Design: A cross-sectional study.

Methods: This study used the convenience sampling method. Three self-designed questionnaires based on clinical experience and literature review were used to collect the current status of nurse-patient disputes and to assess patients' humanistic qualities and patients' recognition of nursing work. The Big Five personality questionnaire was used to assess the five personality traits of patients.

Results: Of the patients, 9.6% reported having a dispute with nurses. The results of binary logistic regression analysis indicated that patients' humanistic quality, recognition of nursing work and agreeableness in personality traits had a negative predictive effect on nurse-patient disputes, while family monthly income and neuroticism in personality traits positively predicted disputes.

KEYWORDS
humanistic quality, nurse education, nurse-patient disputes, nurse-patient relationship, personality characteristics, workplace violence

1 | INTRODUCTION

In recent years, the medical conflict has attracted much attention. As an important part of the medical conflict, nurse-patient dispute is an important factor hindering the construction of a harmonious relationship between medical staff and patients. Nurses have the most frequent contact with patients and their families, and are also prone to a variety of disputes. Nurse-patient disputes refer to conflicts and disputes between nursing staff and patients that arise for various reasons in clinical nursing work and usually occur in the process of nursing staff serving patients (Walker & Breitsameter, 2013).

A dispute in this article is defined as an incident that undermines the good relationship between the healthcare professional and the care recipient (or family) and requires third-party mediation (Aoki et al., 2008). In China, nurse-patient disputes generally manifest as physical confrontation and verbal abuse. Because the hospital is a public service facility, disputes between medical staff and patients and even violent injuries are inevitable.

Nowadays, with the continuous reform of the medical system and the gradual improvement of the level of medical technology, patients have developed excessively high expectations of the treatment effect in the process of seeking medical treatment, which

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tends to produce discrepancies between expectations and reality (Aiken et al., 2018). In addition, with the improvement of patients' legal consciousness, their requirements for medical service quality and awareness of their medical rights are also constantly increasing (Rios, 2019), which will exacerbate conflict.

More researchers are now focusing on the influencing factors of doctor-patient disputes, seeking more humane ways to deal with them and create a harmonious doctor-patient communication environment (Amirthalingam, 2017; Qiao et al., 2019; Oppenheim et al., 2008). As yet, little research has explored the incidence of nurse-patient disputes and the influencing factors. The conflicting relationships that arise between nurses and patients are often overlooked by researchers. Therefore, it is necessary to conduct a cross-sectional study on the current situation of nurse-patient disputes, and to remind hospital administrators of the tension in the nurse-patient relationship in a way of warning. This paper focuses on the impact of patient characteristics on the generation of nurse-patient disputes to give patient-side entry points for nursing managers to handle dispute incidents.

2 | BACKGROUND

Medical dispute has become one of the major social issues that seriously restrict the healthy development of medical and health care in China today. Nurses, as close contact with patients in the care process, are the most likely to be an object of catharsis for patients' dissatisfaction with medical services. In recent years, the nurse-patient relationship in healthcare services has become increasingly tense, and the number of nursing disputes has been on the rise in a diversified manner. A study on the status of judicial decisions on nursing medical damage liability disputes (Cao et al., 2021) showed that there were 1,099 cases of nursing disputes from October 2010 to December 2019, with a significant upward trend in cases from 2013 to 2019, reaching 260 cases in 2018. Increasingly, the public questions whether nurses are truly making decisions based on the best interests of their patients or whether they are receiving excessive financial incentives (Michael et al., 2016). These situations lead to potential disagreements and conflicts in the nurse-patient relationship.

In other countries, nurse-patient disputes are still a problem in the medical environment (Feo et al., 2017; Gogos et al., 2011). In a survey of 1,526 healthcare workers conducted by Gordon et al. (2010), 803 (52.6%) had experienced workplace violence and 147 (18.3%) had experienced physical violence. Clinet et al. (2015)'s findings showed that of 171 medical dispute cases, 96 (56%) involved physical and verbal assault and the other 75 (44%) involved property assault, but there was no gender difference. The destructive behaviour manifest in nurse-patient disputes may have negative effects on both parties and may have a negative impact on the quality of care (Assaye et al., 2018). It also leads to stress, anxiety (Pask, 1995), depression (Dyrbye et al., 2019) and anger, which in turn hinder communication and collaboration between nurses and patients (Carmen et al., 2018), leading to medical errors and poor quality of care (Jun et al., 2013). The findings of Mcclelland et al. (2017) confirmed that different

attitudes of clinical patients had a certain degree of influence on nurses' compassion practices, emotional exhaustion and psychological vitality. Therefore, nurse-patient disputes are a noteworthy issue, and it would be meaningful to anticipate nurse-patient disputes and thus intervene early to avoid them.

Patient characteristics may be an influential factor in nurse-patient disputes. The predictive role of patient characteristics on medical disputes has been previously confirmed. A previous study (Du et al., 2020) collected patient questionnaires from 12 public hospitals in five provinces in China, and counted the socio-demographic information of 5,556 participants and their reactions and attitudes towards medical disputes. Results showed that 1.5% of patients faced with medical disputes resorted to violence, and patients who were more likely to engage in "violent" behaviour were male (OR = 1.81, $p < .05$), high-income earners (OR = 3.71, $p < .05$), or reported lower life satisfaction (OR = 1.40, $p < .05$). These findings help hospitals identify the characteristics of patients who may resort to violence and other undesirable behaviours to resolve medical disputes, and better intervene in these specific groups early to reduce the incidence of disputes and improve patient satisfaction. It is noteworthy that in the real Chinese healthcare environment, nurse-patient disputes account for a certain proportion of medical disputes. However, it is still unknown patients with which characteristics are more likely to have disputes with nurses. Therefore, a cross-sectional survey in this paper aims to find out patient characteristics that have an impact on nurse-patient disputes.

Previous studies have shown that patients often believe that disputes were caused by operational problems in the work of nursing staff (Bible et al., 2016; Goh et al., 2018). However, in one study, only 2.99% of incidents were actually caused by medical malpractice, while 13.68% were related to patients' dissatisfaction with the service (Li & Liu, 2011). Liu et al. (2018) found that the top three factors affecting patient satisfaction with medical care were "long wait time for treatment", "complicated procedures" and "poor overall service attitude". Therefore, we assumed that patients' satisfaction with nursing work may be an influencing factor in nurse-patient disputes. Humanistic quality refers to people's views on life, moral sentiments and the way to interact with others (Liu & Zhang, 2018). Good humanistic quality would be conducive to maintain interpersonal harmony and social stability, otherwise it may lead to interpersonal conflicts. A Chinese scholar once pointed out that one of the fundamental ways to reduce vicious medical disputes was to improve the humanistic quality of the whole nation (Liu, 2016). So far, there have been few researches on the humanistic quality of patients, so it is not clear whether the humanistic quality of patients will affect their relationship with nurses in medical settings. Accordingly, this study attempted to explore the relationship between patients' humanistic quality and nurse-patient disputes. Personality contains almost everything about an individual, encompassing all of his or her mental, emotional, social and physical qualities (Potur et al., 2019). People with different personalities have different coping styles in the face of stress events and are affected by such events differently (Rashidi et al., 2011). Disease itself is an important stress for patients.

Patients with different personality characteristics may respond to stress in different ways and have different attitudes towards nurse when receiving care. Therefore, it may lead to different probabilities of disputes between patients with different traits and nurses. However, no reports on the relationship between patient's personality and nurse-patient disputes have been previously published. Thus, this study hypothesized that patient's personality may be a potential factor influencing disputes. In summary, according to the literature review, we found that patients' satisfaction with nursing work, patient's humanistic quality and personality may be factors that affect nurse-patient disputes. Thus, we designed the questionnaire with the above three factors as the main research variables.

At present, nursing managers focus mainly on disputes in medical work settings such as outpatient departments (Qiao et al., 2019a), emergency rooms (Herreros et al., 2010) and infusion rooms (Steven et al., 2014), analysing the causes and making management proposals primarily from the perspective of nurses (Boamah, 2019; Ghassemi et al., 2019). Few studies have analysed the relevant factors of nurse-patient disputes from the perspective of patients.

Therefore, this study started from a non-traditional research perspective and analysed the factors affecting nurse-patient disputes based on patients' characteristics. At the same time, this research attempted to find out the potential connection between the patient's humanistic quality, personality characteristics and other internal factors and the occurrence of disputes, and to give new ideas for alleviating nurse-patient disputes.

2.1 | Aims

The purposes of this study were to (a) investigate the current situation of nurse-patient disputes; (b) analyse the relationship between the incidence of disputes and patients personality characteristics, humanistic quality and recognition of nursing work from the perspective of patients; and (c) give a scientific basis for the prevention of disputes and the continuous improvement of nursing quality.

3 | METHODS

3.1 | Design

This study employed a cross-sectional observational survey design, using convenience sampling. We followed the Strengthening the Reporting of Observational Studies in Epidemiology Statement (STROBE) in reporting this study (Supplementary Material) (Elm et al., 2008).

3.2 | Setting

Data were collected from two general public hospitals in Zhejiang Province, China, both of which are Grade-A Tertiary Hospitals;

top-tier hospital in Chinese hospital evaluation system (National Health Commission of the People's Republic of China, 2011) and the comprehensive medical level is in the forefront of Zhejiang Province. Take one of the hospitals as an example. The hospital has six clinical diagnosis and treatment centres, 47 clinical departments, eight medical technical departments and internal and surgical laboratories. Among them, there are about 4,200 beds in the inpatient department, and the average number of outpatient visits per day is 8,670. Therefore, the sample source is very sufficient. Each ward and outpatient has a "demonstration room" for consultation talks and signing informed consent forms for surgery. In this study, the "demonstration room" could be used for investigation for its quiet and calm environment.

3.3 | Participants

Participants were general adults (aged 18+) recruited from different departments (outpatient, emergency and inpatient) of two Grade-A Tertiary Hospitals in Zhejiang Province, China. Inclusion criteria include: (a) conscious; (b) normal vision or hearing; (c) no serious organic disease; and (d) informed consent.

According to Price (Price, 1992), the sample size for general analysis is generally not less than 200; Tinsley (Tinsley & Tinsley, 1987) believes that the sample size needed for the study needs to consider the number of variables studied, and usually the ratio of the number of variables studied to the sample size of 1:5 to 10 is better. In this study, the sample size was determined based on the principle that the sample size is at least 10 times the number of test entries, and a 10% attrition rate was accounted for. Therefore, at least 506 subjects were intended to be included.

3.4 | Data collection

First, the informed consent of the nursing department directors of the two hospitals was required before data collection. Second, the researcher recruited nursing students as investigators at a medical university in Zhejiang Province to conduct questionnaire surveys. To ensure the research quality, the investigators were trained in a unified way before the formal investigation so that they were clear about the purpose of the study and the data collection methods. During the formal investigation, the investigators first explained the concept of nurse-patient dispute, the purpose and content of the survey to the patients who met the inclusion criteria. Next, the investigators emphasized the preamble of the questionnaire to the patients, especially let them know that this questionnaire was anonymous and there was no right or wrong answer. Only with the consent of patients, the formal questionnaire survey would be administered. The whole process of filling out the questionnaire was one-to-one service. In case of conceptual problems, the investigator would explain it to the patients with neutral words, rather than guide them to fill in. After completing the questionnaire, the

investigator checked it on the spot. If there was a lack of information, the patient would be asked to complete it. Questionnaires with 15% of the final content missing were set as invalid (Hanscom et al., 2002).

A total of 879 questionnaires were distributed, and 49 cases were lost due to participant involvement in treatment or disinterest in the study, with an attrition rate of 5.57%. The remaining 830 patients completed the questionnaire, and a total of 37 cases were excluded by on-site inspection. Among them, there were 22 cases with missing parts >15% in the questionnaire. The 15 cases that were filled in the same order, which the researchers believed reflected the ambiguous attitude of the respondents and did not fill in the questionnaires according to the real situation, were excluded. Finally, 793 complete questionnaires were obtained with an efficient rate of 95.5%. All data were collected from February and April 2019 and kept by the person specially assigned (Figure 1).

3.5 | Instruments

The finally established questionnaire for the current survey contained five sections:

3.5.1 | Section 1: Demographic information

On the basis of the results of existing research and clinical practice experience, the final indicators chosen in the study were: gender, age, marital status, level of education and monthly household income. The monthly household income was classified according to the average income level of urban families in Zhejiang Province: Less than 5,000 CNY (equivalent to UK£572.5) or greater than or equal to 5,000 CNY.

3.5.2 | Section 2: Current situation of nurse-patient disputes

We developed the "Current Situation of Nurse-Patient Disputes Questionnaire" based on clinical experience and literature review (Lili et al., 2007; Gao et al., 2010). This part started with the question "Have you ever had a dispute with a nurse?" Participants who answered "Yes" were then invited to answer the next questions contained in the questionnaire. To obtain an overview of nurse-patient disputes, the variables selected were as follows: occurrence, cause, resolution and satisfaction.

3.5.3 | Section 3: Humanistic quality of patients

The "Patient Humanistic Quality Questionnaire" was self-designed by researchers, influenced by the "Nurse Humanistic Quality Questionnaire" (Cronbach's alpha was 0.828) (Wang et al., 2012) which was previously developed by Chinese scholars. Through literature review and expert consultation, 37 items were finally established. The questionnaire included five dimensions: moral quality, cultural quality, legal quality, aesthetic quality and psychological quality. The Cronbach's alpha of the questionnaire as a whole was 0.961, and the test-retest reliability was 0.983. The content validity index was 0.915.

Moral quality. Nine items examined the codes of conduct and norms exhibited by participants in the medical environment. Cronbach's alpha was 0.925.

Cultural quality. Eight items evaluated the current level of medical knowledge of the individual and his or her ability to acquire medical knowledge actively. Cronbach's alpha was 0.841.

Legal quality. Six items examined the legal thinking ability of participants. Cronbach's alpha was 0.844.

Aesthetic quality. Four items examined participants' ability to accept and appreciate beauty. Cronbach's alpha was 0.796.
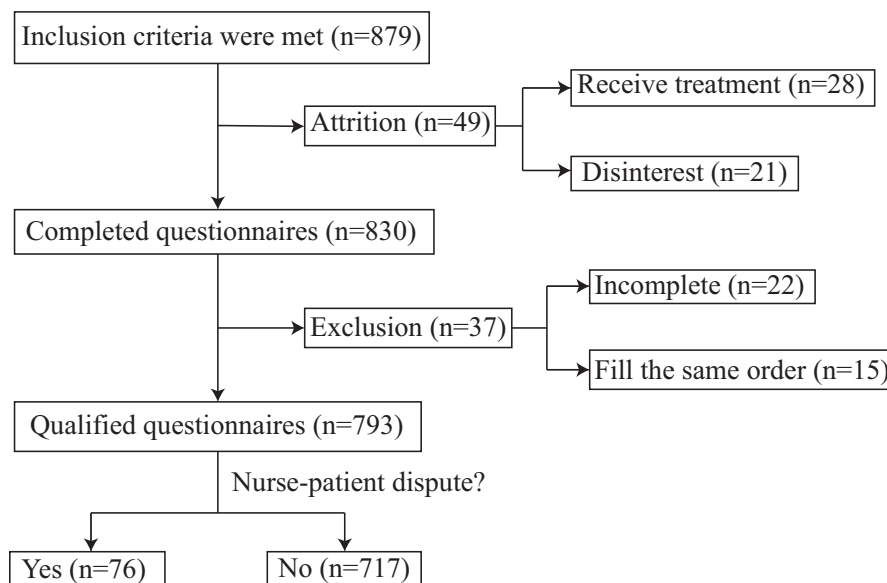
Psychological quality. Ten items examined the attitude and psychological adaptability towards disease and treatment of participants. Cronbach's alpha was 0.880.

Participants were asked to rate each statement on a Likert scale of 1–5, where 1="completely non-conforming" and 5="completely conforming". The higher the total score was, the higher the humanistic quality.

3.5.4 | Section 4: Patients' recognition of nursing work

The "Patients' Recognition of Nursing Work Questionnaire" was developed by researchers on the basis of clinical experience and literature review (Aiken et al., 2012; Peršolja, 2018; Vahey et al., 2004). The questionnaire contained ten questions, representing the participants' approval with different aspects of the nursing work (such as nursing technology and humanistic care). Participants were asked to rate each statement on a Likert scale of 1–3, where 1 = "disagree", 2 = "neutral" and 3 = "agree". The higher the total score was, the higher the patients' recognition of nursing work. Cronbach's alpha was 0.790, and the test-retest reliability was 0.807. The content validity index was 0.836.

3.5.5 | Section 5: Personality traits

The Chinese Big Five Personality Inventory Brief Version (CBF-PI-B) developed by Wang et al. (2011) is applied to investigate the personality characteristics of the public. The scale has been used to measure the personality of patients in China and been proved to have good reliability and validity (Fan et al., 2013). The scale was publicly available, and the original scale was in Chinese. The questionnaire included five dimensions, each dimension contained 8 items, for a total of 40 items.

(a) *Neuroticism*. This part measured individual differences in emotional stability (Cronbach's α was 0.81).

(b) *Conscientiousness*. This part measured the individual's tendency to control impulse in accordance with the requirements of social norms (Cronbach's α was 0.81).

(c) *Agreeableness*. This part measured the individual's sympathy for human nature and the encounters of others (Cronbach's α was 0.76).

(d) *Openness*. This part measured the individual's attitude towards new things (Cronbach's α was 0.78).

(e) *Extroversion*. This part measured the strength and dynamic characteristics of the individual's nervous system (Cronbach's α was 0.80).

A Likert scale ranging from 1 = "totally inconsistent" to 6 = "completely consistent" was used. The higher the score of a dimension was, the more the respondent's personality corresponded to this personality type.

3.6 | Ethical considerations

The ethics committee of Wenzhou Hospital of Integrated Traditional Chinese and Western Medicine approved the design of this study on 26 January 2019 (approval number: 2018–55). First, in accordance with the principle of informed consent, the subjects all signed an informed consent form. Second, we followed the principle of confidentiality. The identity information of the subjects was kept strictly confidential and not disclosed to members outside the research team. Third, the principle of respect was also followed, that is, the subjects had the right to decide whether to participate or not, and can withdraw from the investigation at any time.

3.7 | Data Analysis

All statistical analyses were performed using IBM SPSS Statistics version 25.0 (SPSS Inc). Numerical variables were presented as the mean and standard deviation because they were normally distributed. Categorical variables were shown as numbers and percentages (%). The differences between the dispute group and the non-dispute group were assessed using the chi-squared test for categorical variables or the independent-samples T test for numerical variables. Subsequently, the binary logistic regression analysis was performed in which nurse-patient dispute (Yes = 1, No = 0) was the dependent variable and indicators with statistical significance ($p < .05$) and marginal significance ($p < .1$) in the univariate analysis were included as independent variables to determine the factors influencing the dispute. A value of <0.05 was considered statistically significant. The missing numeric data were replaced with mean values, and the missing categorical data were replaced with the mode.

4 | RESULTS

4.1 | Demographic characteristics

A total of 793 participants completed the survey. 448 (56.5%) were male and 345 were (43.5%) female. Patients ranged in age from 18 to 86 years, with a median age of 42 years. The vast majority of the participants (82.3%) were married, and the rest were unmarried, divorced or widowed. 67.8% received high school education or above, but it was worth noting that 10.3% were illiterate. Among all the respondents, 56.6% had a monthly household income more than or equal to 5,000 CNY (equivalent to UK£572.5), which is a slightly higher proportion (Table 1).

4.2 | Current situation of nurse-patient disputes

In this survey, 76 patients (9.6%) had engaged in disputes with nurses, and most disputes occurred only once (65.8%). Those aged 46 to 59

TABLE 1 Sample Characteristics (n = 793)

Variable	N	%
Gender		
Male	448	56.5
Female	345	43.5
Age (years)		
<45	430	54.2
46 ~ 59	164	20.7
≥60	199	25.1
Marriage		
Married	653	82.3
Unmarried	107	13.5
Divorced or widowed	33	4.2
Education		
Illiteracy	82	10.3
Primary school	174	21.9
Middle school	320	40.4
University or above	217	27.4
Monthly household income (CNY)		
<5,000	344	43.4
≥5,000	449	56.6

Note: 5,000 CNY was approximately equivalent to US$736.5.

TABLE 2 Current situation of nurse-patient disputes (n = 76)

Variable	N	%
Number of times		
Once	50	65.8
Twice	18	23.7
Three times and more	8	10.5
Cause of disputes		
Medical technology level	20	26.3
Medical staff's attitude	46	60.5
Medical charges	34	44.7
Hospital environment	18	23.7
Hospital management regulations	13	17.1
Solution		
Reporting to the clinical department	39	51.3
Reporting to the hospital	13	17.1
Reporting to the media	3	3.9
Complaining to Health Bureau	6	7.9
No action taken	27	35.5
Satisfaction with dispute resolution		
Dissatisfaction	32	42.1
Neutral	37	48.7
Satisfaction	7	9.2

had the highest incidence of disputes. Medical staffs' attitude, medical charges and medical technology level were the three main reasons why patients think disputes occurred. About how the dispute was handled, more than half of the patients (51.3%) reported directly to the clinical department, only a small number of people (3.9%) chose to resort to the media. Ultimately, nearly half of the patients were still dissatisfied with the results of dispute resolution (Table 2).

4.3 | Influencing factors of nurse-patient disputes

4.3.1 | Univariate analysis of disputes

Through univariate analysis, the variables of monthly household income, humanistic quality, recognition of nursing work, neuroticism, conscientiousness, agreeableness and extroversion were found to be significant ($p < .05$), and age was marginally significant ($0.05 < p < .1$) (Table 3).

4.4 | Multivariate analysis of the factors influencing nurse-patient disputes

The results showed that humanistic quality, recognition of nursing work and agreeableness had a negative predictive effect on disputes, while family monthly income and neuroticism had a positive predictive effect (Table 4). This means that patients with high humanistic quality scores were less likely to have disputes with nurses. Similarly, patients with high recognition with nursing work and more agreeable personality traits during the hospital visit had fewer nurse-patient disputes. On the other hand, patients with low family monthly income and more neurotic personality traits were more likely to have disputes.

5 | DISCUSSION

The results showed that there was a certain proportion of nurse-patient disputes in clinical settings, and patients' family economic status, humanistic quality, recognition of nursing work and personality characteristics had a significant impact on disputes.

5.1 | Current situation of nurse-patient disputes

The results of this survey showed that 9.6% of the patients reported having disputes with nurses, which was lower than the results of a survey conducted by Yu et al. (2006). Yu et al.'s result showed the incidence rate of disputes was 57.56%. This may be due to a difference in research perspective, as this study was based on the perspective of patients. Patients often view things based on their own interests and do not associate their destructive actions and violence with disputes. However,

TABLE 3 Univariate analysis of nurse-patient disputes

Variable		No		Yes		χ^2/t	p-value
Gender		n	%	n	%		
Male	(n = 448)	399	89.1	49	10.9	2.177	0.140
Female	(n = 345)	318	92.2	27	7.8		
Age (years)							
<45	(n = 430)	390	90.7	40	9.3	5.909	0.052
46 ~ 59	(n = 164)	141	86.0	23	14.0		
≥60	(n = 199)	186	93.5	13	6.5		
Marriage							
Married	(n = 653)	588	90.0	65	10.0	0.661	0.719
Unmarried	(n = 107)	99	92.5	8	7.5		
Divorced or widowed	(n = 33)	30	90.9	3	9.1		
Education							
Illiteracy	(n = 82)	78	95.1	4	4.9	3.309	0.346
Primary school	(n = 174)	159	91.4	15	8.6		
Middle school	(n = 320)	284	88.8	36	11.3		
University or above	(n = 217)	196	90.3	21	9.7		
Monthly household income (CNY)							
<5,000	(n = 344)	324	94.2	20	5.8	9.965	0.002
≥5,000	(n = 449)	393	87.5	56	12.5		
Humanistic quality							
Moral quality		35.83 ± 4.36		32.12 ± 6.23		5.068	0.000
Cultural quality		25.82 ± 5.97		24.64 ± 6.65		1.475	0.144
Legal quality		22.90 ± 3.63		20.96 ± 4.43		3.696	0.000
Aesthetic quality		14.53 ± 2.80		12.80 ± 3.98		3.694	0.000
Psychological quality		37.72 ± 5.43		33.47 ± 7.28		4.945	0.000
Total score of humanistic quality		136.81 ± 19.72		124.00 ± 26.97		4.028	0.000
Recognition of nursing work		25.45 ± 2.52		24.17 ± 4.42		2.490	0.015
Personality traits							
Neuroticism		23.36 ± 7.58		27.33 ± 7.31		−4.352	0.000
Conscientiousness		37.43 ± 6.14		35.91 ± 6.43		2.051	0.041
Agreeableness		38.14 ± 5.90		34.18 ± 6.75		5.475	0.000
Openness		31.97 ± 5.85		31.41 ± 5.68		0.800	0.424
Extroversion		31.65 ± 6.29		30.04 ± 6.80		2.103	0.036

Note: 5,000 CNY was approximately equivalent to US$736.5.

as a moral disadvantaged, nurses perceived the verbal abuse, physical pushing and shoving they experience at work as disputes.

In this study, more than half (60.5%) of patients with previous experience of disputes thought the dispute was related to the attitude of medical staff. This perception may be related to job burnout among nurses (Bakker et al., 2005; Dyrbye et al., 2019) due to the invariable working environment and highly repetitive nature of nursing work. This leads to a lack of patience in communicating and a positive attitude in dealing with nursing problems (Fleischer et al., 2009; Ozer et al., 2019).

Nearly half (44.7%) of patients identified medical charges as a secondary cause of disputes. As hospital information technology

continues to improve, online services are often employed for the settlement of diagnosis and treatment charges. When patients are not familiar with the medical service system, they may not receive notifications in time, resulting in information delay.

5.2 | Positive predictive effect of monthly household income on nurse-patient disputes

Univariate analysis showed that patients with a monthly household income lower than 5,000 CNY (5.8%) were less likely to have disputes

TABLE 4 Binary logistic regression of nurse-patient disputes

Variable	β	SE	*p*-value	OR	95%CI	
Age	0.095	0.174	0.586	1.100	0.782	1.547
Monthly household income	**1.040**	0.301	**0.001**	2.828	1.568	5.099
Humanistic quality	**−0.021**	0.006	**0.001**	0.979	0.967	0.991
Recognition of nursing work	**−0.093**	0.046	**0.041**	0.911	0.833	0.996
Neuroticism	0.049	0.020	**0.013**	1.050	1.010	1.091
Conscientiousness	0.028	0.026	0.285	1.028	0.977	1.082
Agreeableness	**−0.082**	0.024	**0.001**	0.921	0.879	0.965
Extroversion	−0.009	0.022	0.677	0.991	0.949	1.035
Constant	2.010	1.707	0.239	7.464		

than those with a monthly household income higher than 5,000 CNY (12.5%). The results of logistic regression further indicated that patients with higher monthly household incomes had a higher risk of nurse-patient disputes. The possible reasons are as follows: monthly household income is often used to assess socioeconomic status (Kim et al., 2018). People with lower incomes are generally less educated and lack medical and legal knowledge, which makes them more likely to trust medical staff and exhibit higher treatment compliance. In addition, because these people may have suffered more setbacks in life and are often the weaker party in interpersonal relationships, they tend to be grateful and contented with the care of nurses and are not quick to engage in disputes with them.

According to the above analysis, it is suggested that nurses try their best to meet the needs of high-income people for disease-related knowledge and treatment information to dispel the doubts of patients and their families. Of course, nurses should also pay attention to the psychological needs of vulnerable low-income groups because they are often embarrassed to express their needs.

5.3 | Negative predictive effect of patients' humanistic quality on nurse-patient disputes

The results of univariate analysis showed that the overall humanistic quality scores and the dimension scores of the patients with disputes were lower than those without disputes. The results of logistic regression further indicated that the higher the humanistic quality of patients was, the lower the probability of nurse-patient disputes. The following explanations are offered: (a) Moral quality is something that individuals gradually form and improve through social practice. High moral quality is often a reflection of good family education (Jansen and Hanssen, 2017). Regardless of wait time or hospitalization duration, patients with high morality can show gentleness and humility. They will not treat medical and health venues as "consumption places" and treat medical staff as "service providers". As a result, such patients can often establish a stable and harmonious relationship with nurses and rarely have disputes with them. (b) Currently, the legal consciousness and sense of self-protection of citizens has been increasing and has become more obvious. Patients with weak legal awareness and lack of legal knowledge

will not protect their rights and interests through legal means and may do things without considering the seriousness of the consequences, which is the main reason for frequent medical disputes and violent incidents. (c) Patients with high aesthetic quality tend to have a peaceful mind, be adept at discovering the beauty of life and to recognize the humanistic care of nurses, so they rarely engage in disputes with nursing staff. (d) Psychological quality is manifest in the ability to internalize an external stimulus into stable, implicit, derivative and developmental functions and is closely related to adaptive and creative behaviours (Bath et al., 2003). Therefore, patients with stable psychological quality have higher resilience in the face of the discomfort caused by disease and its treatment; thus, they are not inclined to transfer their misfortunes and pressures to medical staff and cause unnecessary disputes.

Consequently, it is suggested that the hospital and the community should pay more attention to patients with low humanistic quality, especially those with low legal quality and poor psychological quality. The community can popularize health laws and regulations, and medical staff should strengthen health knowledge education for patients. In addition, medical staff should give more humanistic care to patients to improve patient satisfaction.

5.4 | Negative predictive effect of patients' recognition of nursing work on nurse-patient disputes

The results of this investigation showed that the higher the patient's recognition of nursing work was, the fewer the disputes. If patients can better understand what nursing work entails, they can appreciate and trust nurses and respect their work and social value more. For example, when a new nurse fails to give a patient a successful infusion, the patient would be tolerant and understanding instead of causing conflict.

With the above results, we can also reflect on nursing behaviour, specifically, a nurse's responsible and caring image can enhance mutual trust between nurses and patients and achieve a win-win situation. More importantly, nursing managers should strengthen humanistic care training for nurses, improve their empathy ability (Jones et al., 2017; Bahare et al., 2019), and practice "patient-centred" nursing (Hsieh et al., 2018; Mccabe, 2004).

5.5 | The influence of patients' personality characteristics on nurse-patient disputes

According to the results in Table 2, neuroticism and agreeableness were the two factors affecting the occurrence of nurse-patient disputes.

5.5.1 | (1) Positive predictive effect of neuroticism

Neuroticism refers to an individual's emotional state and the tendency to experience inner distress (Wang et al., 2010). People with high scores on neuroticism often show mental states such as anxiety, depression, over-sensitivity, vulnerability, anger and hostility. When neurotic patients are in a relatively unfamiliar medical environment, they often express doubts and make groundless accusations about the hospital environment and the work ability of the medical staff, and they may not cooperate with clinical examination and treatment.

Hence, nurses should try their best to assess patients' psychological state through questionnaires (Davies & Rundall, 2000), conversation and other methods and take specific preventive measures for patients with neuroticism. For example, we can arrange the oversensitive patients in a relatively independent, quiet and comfortable ward as far as possible. In terms of the hospital environment, warmer and more humanistic details and decorations can be arranged. If necessary, a psychologist can be consulted to relieve the negative emotions of the patients and avoid disputes.

5.5.2 | (2) Negative predictive effect of agreeableness

Agreeableness refers to humaneness or benevolence in interpersonal communication (Wang et al., 2010). Patients with high agreeableness scores often show consideration, trust and sympathy. Such patients can maintain good compliance during treatment or hospitalization, communicate effectively with nurses, and better perceive the humanistic care behaviour of nurses. Therefore, agreeable patients will rarely have disputes with nurses that are difficult to mediate.

5.6 | Study Limitations

Its robust results notwithstanding, the present study has some limitations in data collection. The statement of variables in the status quo of nurse-patient disputes depended on the patient's review of past events, and patients may show a more positive attitude to answer the questions when the investigators were nearby. This may become a source of information bias, which should be systematically taken into account in studies. Another limitation of this study is that because demographic information on attrition respondents could not be collected, it was not possible to compare attrition patients with included patients at baseline to see if there was a difference.

6 | CONCLUSIONS

The results of this study confirmed that the patient's humanistic quality, recognition of nursing work, agreeableness and neuroticism in personality characteristics, and family monthly income are the influencing factors of nurse-patient disputes. All of the above factors should be of great importance to hospital managers, medical staff and even government departments. The government should promote to improve the humanistic quality of the public and their recognition of nursing work. In the process of establishing and maintaining the nurse-patient relationship, nurses should pay attention to the influence of patient personality traits on nurse-patient disputes, leading to individualized and holistic care. For nursing managers, they should focus on improving the professional quality of nurses, in order to obtain higher recognition of patients and reduce the opportunity of disputes.

Our findings add a new research perspective of nurse-patient disputes. Future research in this field should thus focus on the following aspects: (a) we suggest to carry out a multicentre study to further validate the existing findings, and (b) it is necessary to explore the underlying factors influencing the occurrence of dispute by conducting qualitative interviews with patients.

CONFLICT OF INTEREST
None.

AUTHOR CONTRIBUTIONS
In this study, Hong-Bo XU, Zhong-Qiu LU and Ju-Fang Li conceived and designed the study. Ya-Wen WANG, Qian YE and Jin-Jin LU performed the investigation. Jin-Jin LU, Li JI and Ju-Fang Li performed the data analyses. Ya-Wen WANG, Hong-Bo XU and Zhong-Qiu LU wrote the manuscript. Hong-Bo XU and Ya-Wen WANG reviewed and edited the manuscript. All authors read and approved the manuscript.

ETHICS APPROVAL
The study was approved by the Ethics Committee of Wenzhou Hospital of Integrated Traditional Chinese and Western Medicine in Zhejiang Province, China. (Approval No. 2018–55).

DATA AVAILABILITY STATEMENT
The data that support the findings of this study are available from the corresponding author upon reasonable request.

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