

BMJ Open Workplace violence against nurses in Chinese hospitals: a cross-sectional survey

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ABSTRACT

Objectives: To determine the prevalence of workplace violence that Chinese nurses have encountered, identify risk factors and provide a basis for future targeted interventions.

Setting: Heilongjiang, a province in northeast China.

Methods: A cross-sectional survey.

Participants: A total of 588 nurses provided data. There were also in-depth interviews with 12 nurses, 7 hospital administrators and 6 health officials.

Results: A total of 7.8% of the nurses reported physically violent experiences and 71.9% reported non-physically violent experiences in the preceding year. Perpetrators were patients or their relatives (93.5% and 82%, respectively), and 24% of nurses experienced non-physical violence that involved Yi Nao (gangs specifically targeting hospitals). Inexperienced nurses were more likely to report physical (13.2%) or non-physical (89.5%) violence compared with experienced nurses. Graduate-level nurses were more likely to perceive and report non-physical violence (84.6%). Nurses who worked rotating shifts were 3.668 times (95% CI 1.275 to 10.554) more likely to experience physical violence, and 1.771 times (95% CI 1.123 to 2.792) more likely to experience non-physical violence compared with nurses who worked fixed day shifts. Higher anxiety levels about workplace violence and work types were associated with violence. Interviewees perceived financial burdens, unsatisfactory treatment outcomes and miscommunications as influencing factors for workplace violence.

Conclusions: Preplacement education should focus on high-risk groups to reduce workplace violence. Increased awareness from the public and policymakers is necessary to develop effective control strategies at individual, hospital and national levels.

BACKGROUND

In 2012, at the first affiliated hospital of Harbin Medical University (the hospital sampled in this study), a 17-year-old boy fatally stabbed a young intern who was involved in his treatment.¹ In late 2013, several news events shocked China: an angry knife-

Strengths and limitations of this study

- The sample size of 588 respondents from seven hospitals in one province may limit the study's power.
- The retrospective method depends on respondents' memory; therefore, participants may suffer recall bias.
- Despite the limitations, this study provided the necessary evidence for building future interventions for health workers encountering potentially violent emergencies at the local level.

wielding patient violently attacked three nurses in a Changsha hospital; another patient who was unhappy with his nose operation stabbed a department head and two other doctors before being restrained by security guards; and two radiologists were beaten up by nine people after these people were unable to be examined immediately, which resulted in one radiologist being hospitalised.² A survey from the Chinese Hospital Association stated that violence against medical staff was rising; in 2012, there were a recorded 27.3 assaults on medical staff per hospital. Additionally, higher level hospitals suffered from more serious workplace violence (WPV) as these hospitals generally deal with more serious diseases and it is likely this could lead to higher stress levels among patients, family members and staff.²

Abuse of healthcare workers is a common problem, and while there is no general agreement between researchers on the definition, in this study, WPV was defined as "Incidents where staff are abused, threatened or assaulted in circumstances related to their work, including commuting to and from work, involving an explicit or implicit challenge to their safety, well-being or health".³ This definition was adopted from the joint study of the International Labour Office

(ILO)/International Council of Nurses (ICN)/WHO/Public Services International (PSI), which was originally developed by the European Commission in Dublin in 1995.⁴ A report released by the ILO/ICN/WHO/PSI indicated that WPV is a universal issue faced by many occupations.⁵ WPV crosses all boundaries, and it could happen to anybody.⁶ It can be divided into physical violence and non-physical violence (threats, sexual harassment and verbal abuse).⁷

The prevalence of WPV varies by country and occupational setting. It is difficult to draw comparisons between studies, since different study designs and questionnaires were used. However, the following is clear: (1) visitors, intruders, patients and their family members, and co-workers, can be perpetrators of violence against healthcare professionals; (2) WPV can result directly in psychological and physical problems; (3) WPV can decrease job satisfaction and job performance; and (4) WPV can negatively affect patients' medical care.^{6 8–11}

Through wide media coverage of extreme cases, mistrust and even hostility may grow, further destroying the trust-based doctor–patient relationship. Violence in China's hospitals has decreased the morale of healthcare workers, and has affected more long-term perceptions of the profession. A survey by the Chinese Medical Doctors' Association in 2011 revealed that only 7% of doctors would like their own children to enter the medical profession; in 2002, this was 11%.¹²

The WPV study originated from mental health or emergency care settings.^{13 14} In recent years, some studies have focused on WPV in general hospitals, but this has been minimal. Winstanley and Whittington¹⁵ estimated that WPV in general hospitals might be more serious than in mental healthcare settings. Meanwhile, hospital nurses report greater levels of assault compared with community nurses.¹⁶ Recently, more nurses have been the target of hospital violence, drawing grave concern from researchers and healthcare policymakers worldwide.^{17–21} However, in China, WPV remains under-researched, especially in northern China.^{9 22–24} In other countries, patients or their relatives usually perpetrate WPV. Except for several isolated fatal attacks reported in Turkey, Pakistan and the USA, serious injury and murder are very rare. However, the problem in China is unique because of the involvement of Yi Nao, which is literally defined as 'healthcare disturbance'. A 2006 survey of 270 tertiary hospitals reported that over 73% of the participating hospitals had experienced Yi Nao.¹ Hesketh and Wu described Yi Nao as gangs consisting "largely of unemployed people with a designated leader. They threaten and assault hospital personnel, damage facilities and equipment, and prevent the normal activities of the hospital." More broadly, Yi Nao describes any medical or hospital disturbance created by a group of people—such as patients, patients' families, relatives, or Yi Nao gang members hired by patients or their families—who gather at hospitals that are involved in disputes with patients for actual or perceived medical malpractice. The aim of Yi

Nao is to force the hospital to reduce costs or to obtain compensation from hospitals. When financial benefit becomes their main target, they use extreme acts or criminal behaviours in a manner that does not incite physical violence or attract punishment under the law, usually by threatening or abusing health workers verbally, to pressure hospitals to accept their demands.

This study has three objectives: (1) identify the prevalence and severity level of WPV against nurses in general hospitals in Heilongjiang Province, China; (2) investigate the perpetrators of the violence and (3) identify the risk factors contributing to China's WPV.

METHODS

A retrospective cross-sectional survey was conducted in Heilongjiang Province, China. Heilongjiang has a population of 38.1 million with 69 tertiary hospitals scattered across 13 cities. Owing to the time and resource limitations of this study, seven hospitals were purposively selected to represent different areas (east, middle and west) of the province; all seven responded. As most tertiary hospitals are located in the largest city—the capital, Harbin—we selected four hospitals in Harbin (middle area). Another two hospitals were selected in Qiqihar (the second largest city; west area) and one hospital was selected in Jiamusi (east area).

From July to September 2013, we randomly selected 100 registered nurses from various departments of the seven chosen hospitals. We first obtained a list of all nurses from the human resources departments of the hospitals and numbered the list; then we used Stata to generate a list of 100 from each hospital. The nurses were from a variety of departments—internal medicine, surgery, gynaecology, obstetrics, paediatrics, and the intensive care unit (ICU) and emergency room (ER)—and different shift types (rotating shift and fixed day shift). The department managers from the seven chosen hospitals also assisted. After they consented to participate, the nurses were given a questionnaire, which they were asked to complete and return anonymously. To ensure anonymity, envelopes and a box were provided in the manager's office and no names or other identifiers were required. The boxes and questionnaires were the responsibility of one of the authors. Using this procedure, we obtained 588 valid questionnaires (response rate: 84%).

QUESTIONNAIRE

The questionnaire used to measure WPV was developed in 2003 by the ILO/ICN/WHO/PSI joint programme.²⁵ We formally obtained documented permission to use the questionnaire from the ILO and WHO and then invited 17 healthcare-related experts from all over China to evaluate the content validity, including its suitability for use in Chinese culture, and the appropriateness of the translation. They recommended adding Yi Nao-related non-physical violence items to the original questionnaire.

The 2-week test-retest reliability (0.87) was assessed using a group of 37 healthcare workers at five of the surveyed hospitals. The questionnaire was then back-translated to English to verify the accuracy of the Mandarin version.

The questionnaire has four sections: (1) demographic and workplace data, including a question about anxiety levels regarding WPV, which was measured on a scale from 1 (*not at all*) to 5 (*extremely high*); (2) questions about physical violence experiences within the preceding year; (3) non-physical violence, including Yi Nao-related non-physical violence (based on expert panel recommendations), within the preceding year; and (4) three open-ended questions to clarify respondents' opinions on WPV. To evaluate the results of physical and non-physical violence, a post-traumatic stress disorder (PTSD) scale containing four items (rehearsal, avoidance, hyperarousal and effort) was used to ask victims to indicate how much they were bothered by the incidents, with options ranging from 1 (*not at all*) to 5 (*extremely*). These items include "persistent re-experiencing of the traumatic event, such as thoughts, images, dreams, or percepts, persistent avoidance of stimuli associated with the trauma, numbing of general responsiveness, persistent symptoms of increased arousal, such as difficulty in concentrating and disturbances causing clinically significant distress or impairment in functioning."^{26 27} The diagnostic criteria are defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV.²⁷

IN-DEPTH INTERVIEWS

Twenty-five interviewees were purposively selected based on their roles and experience with WPV. The interviews were digitally recorded, transcribed and thematically coded. The final sample size was determined by saturation of information. Altogether, 12 nurses who reported WPV experiences, seven hospital administrators and six health officials completed the interviews.

DATA ANALYSIS

Demographic characteristics and the consequences of reported events were descriptively analysed. Univariate logistic regression analysis was used to evaluate the association between the characteristics of individual demographics and workplaces, and exposure to WPV. Significant factors were subsequently modelled in multivariate logistic regression analyses to estimate the OR of nurses' WPV experience. CIs for the ORs were calculated. IBM SPSS Statistics V.19.0 was used for analysis. Statistical significance was defined as $p < 0.05$.

The interviews were conducted, audio-recorded and transcribed verbatim by a trained interviewer (LL). The interview data were analysed thematically. The coding framework was developed inductively from the data by a researcher with substantial experience in qualitative research (NN). The coding process was supervised by QW and double-checked by YH. The initial coding used

open coding (codes derived directly from the data) and theoretical coding. The initial codes were then refined to produce a smaller set of themes. The coding framework was subject to continuing iterative revision during the analysis.

ETHICAL CONSIDERATIONS

Before the interviews, approval was obtained from each study hospital. All participants gave their informed content to participate.

RESULTS

Demographic and professional characteristics

Table 1 describes the demographic and professional characteristics of the surveyed nurses. A total of 41% of the 588 nurses were aged from 26 to 35 years ($n=241$).

Table 1 Participant characteristics (N=588)

Characteristic	n	Per cent
Gender		
Male	26	4.4
Female	562	95.6
Age groups (years of age)		
≤25	163	27.7
26–35	241	41.0
>35	184	31.3
Years of experience		
≤5	190	32.3
6–10	145	24.7
11–15	78	13.3
16–20	52	8.8
≥21	123	20.9
Marital status		
Single (never married, divorced or widowed)	248	42.2
Married	340	57.8
Level of education		70.7
High school or less	7	1.2
Vocational school	165	28.1
Community college	300	51.0
Undergraduate	103	17.5
Graduate	13	2.2
Work in shifts		
Yes	384	65.3
No	204	34.7
Department		
ER	25	4.3
ICU	24	4.1
Clinical wards	490	83.3
Others	49	8.3
Anxiety level		
Extremely high	244	41.5
High	81	13.8
Moderate	176	29.9
Low	51	8.7
Zero	36	6.1

ER, emergency room; ICU, intensive care unit.

Table 2 Incidence of exposure to workplace violence (N=588)

Exposure to violence	Physical violence		Non-physical									
	n	Per cent	Verbal abuse		Yi Nao		Threats		Sexual harassment		Total non-physical	
			n	Per cent	n	Per cent	n	Per cent	n	Per cent	n	Per cent
Yes	46	7.8	405	68.9	141	24.0	209	35.5	75	12.8	423	71.9
No	542	92.2	183	31.1	447	76.0	379	64.5	513	87.2	165	28.1

Most respondents were female (n=562; 95.6%), married (n=340; 57.8%) and reported working rotating shifts (n=384; 65.3%). In the sample hospitals, nurses undertaking shift work can be divided into fixed day shift and rotating shift groups. Most clinical nurses worked eight-hour shifts; head nurses or nurses involved in infants' breastfeeding schedules worked fixed day shifts, while some hospitals extended this priority level until the children were 4 years of age. There were 190 respondents with 1–5 years of nursing experience (32.3%). About 41.5% reported an extremely high level of anxiety regarding WPV.

Frequency of physical and non-physical violence

In the preceding year, 7.8% (n=46) of nurses reported experiencing physical violence and 71.9% (n=423) had experienced non-physical violence. In all non-physical cases, 68.9% of nurses said they experienced verbal aggression once or more, 24% experienced Yi Nao disturbances, 35.5% experienced threats and 12.8% experienced sexual harassment (table 2).

Over half the nurses who were physically attacked (54.3%) believed the incidents were preventable, meaning that the WPV that they encountered could have been avoided if suitable measures were implemented; one-third of nurses (30.7%) who had suffered non-physical violence believed the incidents were preventable. Nurses who had experienced physical violence comprised 34.8%. Of the respondents who had experienced non-physical violence, 46.8% reported that investigations had been undertaken regarding the causes of the incidents, and that their managers or supervisors had conducted these inquiries. Regardless of whether it was physical (93.5%) or non-physical violence (82%), most perpetrators were patients, however, in some cases, co-workers (1.6%) or managers/supervisors (1.9%) were perpetrators of non-physical violence. Victims of physical violence (39.1%) and non-physical violence (13%) suffered from noteworthy PTSD symptoms (table 3).

Results showed that nurses who work in the ER run the greatest risk of physical violence. Of those who worked in the ER, 20% reported physical aggression; this was followed by respondents with fewer than 5 years' work experience (13.2%), nurses reporting extremely high levels of anxiety regarding WPV (11.9%) and rotating shift workers (10.7%). There were no significant

differences in risk profiles between men and women, ages, or educational groups (table 4).

Higher risk of non-physical violence was related to being single, younger, having higher levels of education, rotating shift work and higher levels of anxiety about WPV. A total of 80.4% of nurses under 25 years of age reported non-physical violence, which decreased gradually with age. Non-physical violence was reported more frequently in the graduate degree group (84.6%) compared with the lower education groups, such as undergraduate (76.7%), community school (74.3%), vocational school (66.1%) and high school or lower (14.3%). Rotating shift workers (79.4%) were exposed to more non-physical violence compared to fixed day shift workers (57.8%). Compared with physical violence, non-physical violence when working in ERs or ICUs was not found to be higher. For physical or non-physical violence, nurses with high anxiety about WPV were more likely to be victims (table 4).

Factors associated with WPV

Multiple logistic regression analysis indicated a reduced risk of physical violence for nurses with over 5 years' work experience, lower anxiety levels about WPV and no experience in the ER. An increased likelihood of being

Table 3 Frequency distributions (in %) for physical and non-physical violence experienced by 588 nurses in the preceding year

Type of violence	Physical violence	Non-physical violence
N	46	423
Incident is preventable	54.3	30.7
Action taken to investigate	34.8	46.8
Who is the assailant?*		
Patient/client	93.5	82.0
Patients' relatives or visitors	6.0	14.0
Staff member	0.0	1.6
Management/supervisor	0.0	1.9
PTSD score*		
<10	21.7	42.1
10–14	30.4	36.6
>14	39.1	13.0

*The sum may be less than 100% because of missing data. PTSD, post-traumatic stress disorder.

Table 4 Characteristics and frequency distributions (in %) for physical and non-physical violence

	Physical violence				Non-physical violence*			
	n	Per cent	χ^2	p Value	n	Per cent	χ^2	p Value
Gender								
Male	2	7.7	0.001	0.980	20	76.9	0.335	0.563
Female	44	7.8			403	71.7		
Marital status								
Single (never married, divorced or widowed)	22	8.9	0.653	0.419	201	81.0	17.631	0.000
Married	24	7.1			222	65.3		
Age groups								
≤ 25	13	8.0	1.443	0.486	131	80.4	29.719	0.000
26–35	22	9.1			187	77.6		
>35	11	6.0			105	57.1		
Level of education								
High school or less	1	14.3	4.560	0.335	1	14.3	17.393	0.002
Vocational school	8	4.8			109	66.1		
Community college	28	9.3			223	74.3		
Undergraduate	7	6.8			79	76.7		
Graduate	2	15.4			11	84.6		
Years of experience								
≤ 5	25	13.2	13.000	0.011	170	89.5	67.061	0.000
6–10	11	7.6			101	69.7		
11–15	4	5.1			55	70.5		
16–20	2	3.8			39	75.0		
≥ 21	4	3.3			58	47.2		
Work in shifts								
Yes	41	10.7	12.502	0.000	305	79.4	30.745	0.000
No	5	2.5			118	57.8		
Department								
ER	5	20.0	8.471	0.037	20	80.0	1.431	0.698
ICU	4	16.7			18	75.0		
Clinical wards	34	6.9			352	71.8		
Other workers	3	6.1			33	67.3		
Anxiety level								
Extremely high	29	11.9	9.942	0.041	186	76.2	21.311	0.000
High	3	3.7			66	81.5		
Moderate	10	5.7			124	70.5		
Low	2	3.9			30	58.8		
Zero	2	5.6			17	47.2		

*Non-physical violence combines verbal abuse, Yi Nao, threats and sexual harassment. ER, emergency room; ICU, intensive care unit.

non-physically abused was predicted among nurses with higher levels of anxiety, while having over 5 years' experience reduced the risk of being abused. Work type did not result in any difference in the likelihood of non-physical violence. In contrast, rotating shift nurses were 3.668 (95% CI 1.275 to 10.554) times more likely to experience physical violence and 1.771 times (95% CI 1.123 to 2.792) more likely to experience non-physical violence compared with nurses who worked fixed day shifts (table 5).

Reasons for WPV

The top three contributing factors for WPV outlined by the nurses were as follows: financial burdens (n=401, 68.2%), unsatisfactory treatment outcomes (n=393, 66.8%) and miscommunications (n=347, 59%). These

findings were confirmed through the interviews with nurses, hospital administrators and health officials.

Qualitative analysis complemented the quantitative analysis by investigating the determinants of WPV. Hospital administrators noted that hospitals now receive very limited financial support from the government, forcing the hospitals to generate more income from the market to cover costs. Additionally, high co-payment rates that are required by medical insurance schemes make medical expenses a heavy burden for patients and their families. Patients also often rush to secondary and tertiary hospitals with unrealistic expectations, overcrowding tertiary hospitals. Regarding the media environment, many nurses and hospital administrators indicated that extensive publicity of various medical errors, disputes or scandals through different forms of

Table 5 Multiple logistic regression of physical (n=46) and non-physical violence (n=423)

	Physical violence n=46						Non-physical violence n=423					
	Unadjusted			Adjusted*			Unadjusted			Adjusted*		
	OR	95% CI	p Value	OR	95% CI	p Value	OR	95% CI	p Value	OR	95% CI	p Value
Years of experience												
≤5	1.0	Reference		1.0	Reference		1.0	Reference		1.0	Reference	
6–10	0.335	0.142 to 0.709	0.013*	0.493	0.228 to 1.064	0.072	0.233	0.123 to 0.442	<0.001*	0.260	0.143 to 0.470	<0.001*
11–15	0.207	0.059 to 0.723	0.014*	0.350	0.113 to 1.091	0.070	0.276	0.126 to 0.606	0.001*	0.326	0.163 to 0.652	0.002*
16–20	0.113	0.022 to 0.596	0.010*	0.212	0.047 to 0.958	0.044*	0.334	0.130 to 0.859	0.023*	0.371	0.164 to 0.842	0.018*
≥21	0.185	0.042 to 0.816	0.026*	0.206	0.068 to 0.624	0.005*	0.132	0.009 to 0.222	<0.001*	0.143	0.075 to 0.271	<0.001*
Work in shifts												
Yes	3.715	1.291 to 10.689	0.015*	3.668	1.275 to 10.554	0.016*	1.803	1.133 to 2.868	0.013*	1.771	1.123 to 2.792	0.014*
No	1.0	Reference		1.0	Reference		1.0	Reference		1.0	Reference	
Anxiety level												
Extremely	1.0	Reference		1.0	Reference		1.0	Reference		1.0	Reference	
High	0.286	0.079 to 1.041	0.058	0.267	0.075 to 0.947	0.041*	1.731	0.863 to 3.471	0.122	1.555	0.795 to 3.039	0.197
Moderate	0.381	0.168 to 0.862	0.021*	0.425	0.194 to 0.931	0.032*	0.692	0.423 to 1.131	0.142	0.660	0.410 to 1.062	0.087
Low	0.392	0.085 to 1.802	0.229	0.343	0.077 to 1.528	0.160	0.549	0.270 to 1.118	0.098	0.487	0.245 to 0.967	0.040*
Zero	0.967	0.196 to 4.769	0.967	0.847	0.178 to 4.030	0.835	0.380	0.173 to 0.836	0.016*	0.351	0.163 to 0.754	0.007*
Department												
ER	1.0	Reference		1.0	Reference							
ICU	0.477	0.096 to 2.373	0.366	0.434	0.088 to 2.143	0.305						
Clinical wards	0.299	0.095 to 0.944	0.040*	0.291	0.093 to 0.911	0.034*						
Others	0.287	0.055 to 1.501	0.139	0.244	0.048 to 1.244	0.090						

*p<0.05; **p<0.01; ***p<0.001.
ER, emergency room; ICU, intensive care unit.

mass media—such as TV, newspapers and the internet—play an important role in provoking distrust in doctors, nurses and hospitals, especially misleading reports on health professionals cheating patients. This negative publicity makes many patients believe that doctors and hospitals conspire to increase charges by prescribing unnecessary, expensive medicines or by providing expensive examinations and other forms of treatment.

Hospital managers noted that patients are now frequently referred to as clients, users, consumers or customers, implying that people in need of health services should take a consumerist role and that they should have high expectations regarding medical results. If the desired results do not materialise, the patients or their families tend to demonstrate their dissatisfaction towards the healthcare professionals with whom they are in direct contact—in particular, nurses.

Healthcare managers are stressed, as patients and their families usually have high expectations for medical treatment and a tendency to believe that the symptoms of diseases can be controlled totally or relieved in hospitals. This results in little tolerance for medical treatment failure. Additionally, other macrosystem factors—such as poor government investment in hospitals and the unsatisfactory role of medical insurance—also contribute to increasing tensions between doctors and patients.

In addition, health officials stressed that institutional factors within hospitals contribute to WPV, such as sluggish procedures, which result in long waiting times. Additionally, poor communication between medical providers (including staff) and patients often leads to WPV. Effective mechanisms to identify and check potential medical risks within a hospital's quality management system are also lacking. Also, individual factors from patients and nurses contribute to WPV. The interviewed health managers believe that the combination of these factors causes dissatisfaction among patients and relatives with their doctors and nurses.

Nurses also noted that heavy workloads and long waiting times are related to WPV. One nurse is responsible for an average of 10 patients; however, this number can rise to more than 1:15, and sometimes nurses must continue to work even when they themselves are unwell. It is common in large hospitals to see nurses work nearly 10 or 11 h a day. When patients' requests cannot be met on time, nurses become the object of frustration, discontent and anger.

DISCUSSION

Our study found that violence and aggression towards nurses is frequent, with non-physical (71.9%) violence being more prevalent compared with physical violence (7.8%). This shows that China is among those countries with relatively high WPV levels.^{28–31} Prevalence of non-physical violence shows a differing tendency by education level: 84.6% of nurses with graduate degrees and 76.7% of nurses with undergraduate degrees report

such violence. This finding is unexpected and inconsistent with other studies, which suggest that a lower level of education is associated with violence.^{8 32–35} There are two possible reasons: (1) in China, nurses with higher levels of education are usually assigned a job with higher responsibility, thereby exposing them to more situations in which they must handle difficult cases and medical disputes, which might result in WPV; (2) nurses with graduate-level education tend to have stronger rights-protection awareness and self-confidence, do not consider assaults as 'part of the job', and do not worry that reporting assaults will lower their external evaluation. Conversely, nurses with a lower level of education might under-report their experiences with violence because they take this violence as an 'expected' part of their job and consider being a victim of violence to be shameful.³⁶ From Hoff's³⁷ study, we know that the stigma of victimisation—shame, threat of further violence, isolation and fear of judgement—often prevents victims from reporting violent behaviour. Additionally, nurses with higher levels of education might have better academic training but little workplace experience compared with their counterparts with lower levels of education, which might mean that they have more exposure to cases that they do not have the skills to manage.

This study found that patients perpetrated 93.5% of physical violence and 82% of non-physical violence incidents; however, other health workers perpetrated 3.5% of non-physical violence on nurses, which is consistent with the results of studies in other countries.^{26 33 35 38–41} Violence perpetrated by other healthcare workers is called 'internal violence', and can be divided into two distinct patterns: lateral and vertical. Abusive behaviour between coworkers of similar status, such as nurse-to-nurse, is lateral violence. Vertical violence refers to behaviour conducted by senior colleagues towards a subordinate.⁴² In our study, 1.6% of internal violence was lateral—perpetrated by staff members—and 1.9% was vertical—perpetrated by senior nurses, supervisors and doctors. This finding is particularly alarming and requires us to pay more attention to internal violence. To prevent this kind of violent behaviour, traditional measures—such as development of personal safety skills and de-escalation—may not be sufficient.

Our study found that 24% of respondents reported suffering non-physical violence in relation to Yi Nao. Owing to the lack of an effective medical dispute-handling system and unsatisfactory social support atmosphere, some patients and their families resort to violence or criminal acts by assaulting staff or destroying hospital facilities to coerce hospitals into an agreement via blackmail. Their goal is to force hospitals into providing them with extraordinary compensations for medical disputes. Another study found that of the 124 cases of violence reported on their website, 37 involved Yi Nao.¹

Our multivariate logistic results indicate that work types, shift-work status, anxiety levels about WPV and nursing experience groups influence the risk of

exposure to physical violence. Our study found that nurses working in an ER have the highest risk of exposure to physical violence, which is consistent with findings in other countries.¹³ Inexperienced nurses are more vulnerable to the risk of WPV than their more experienced colleagues are. The risk level decreases with nursing experience for all types of violence. Nurses who work in rotating shifts are 3.668 times more likely to experience physical violence and 1.771 times more likely to experience non-physical violence compared with those who work fixed day shifts. This finding corroborates with previous studies, which noted that working night shifts was considered a high risk of being exposed to violence with nurses more likely to report physical and non-physical abuse.^{32 38 43}

An important finding in our study is that higher anxiety levels about WPV are associated with an increased risk of physical or non-physical violence. This is consistent with a recent study that found that a higher prevalence of physical violence exists among healthcare workers with higher levels of anxiety.²⁶ The cyclical model by Whittington and Wykes⁴⁴ suggests that stress induced by exposure to violence leads to an adoption of behaviours that in turn increase the likelihood of a reoccurrence of violence. Moreover, for non-physical violence, higher risk is associated with those who are single, younger, have high levels of education and who perform rotating shift work. The relationship between high-level anxiety and violence needs further examination and future studies should consider all of the aforementioned factors.

Other than the risk factors for staff, another predominantly perceived reason for WPV against nurses is related to financial burden, which might be a unique finding in this study compared with research findings in other, more politically stable countries. Such instability and poor financial status have been shown to contribute to the high prevalence of violence against healthcare workers.³⁵ China's health insurance coverage has increased from 15% in 2000 to 96% in 2011, but the co-payment rates of enrollees of different schemes vary from 45% to 70%.⁴⁵ In this situation, it is difficult to reduce the medical care burdens of patients and their families.

Nevertheless, several factors may play a contributory role to WPV against health workers, including unsatisfactory treatment outcomes, miscommunications and healthcare staff characteristics (lack of sensitivity/courtesy/respect/tact). Moreover, some cultural or social factors may contribute to violence against nurses.⁴⁶ Traditionally, Chinese people tend to seek a high level of care even for minor, self-limiting conditions. Because they do not need to obtain referrals from primary care physicians, patients often visit secondary and tertiary hospitals with unrealistic expectations.¹ Overloaded facilities and overworked healthcare staff lead to rushed, 'indifferent' (spending only a few minutes with each patient and lacking effective communication) and

disrespectful treatment of patients, which might be the major causes of doctor-patient tension. Additionally, negative media reports create public distrust and anger against medical professionals; the media, in generating spectacle, tend to report on medical negligence, health system failures and bribe-taking cases.^{1 47-49}

This study has several limitations. First, data were collected retrospectively; this method depends on the ability of participants to recall events that occurred in the 12 months before our study, potentially resulting in recall bias. Second, the study's time and resource restrictions confined the investigation to seven tertiary public hospitals in Heilongjiang Province; therefore, our results may not be generalisable to the entire hospital system in Heilongjiang. However, the exploration of risk factors might be valuable for the control of WPV in general hospitals.

Ending violence against nurses is dependent on efforts from various levels. Preplacement education should focus on at-risk groups to reduce WPV at an institutional level, while national strategies should also be developed to respond to WPV. If government investment in hospitals is increased, a redesign of health insurance could potentially decrease the burden. Strong actions against the criminal offences of Yi Nao in accordance with the law and regulations can help safeguard health worker security. A better system of legal redress would also help reduce acts of retributive violence and reliance on Yi Nao in dealing with disputes and obtaining compensation. Additionally, news media should encourage the public to rebuild the image of the healthcare provider as attractive, respected, rewarding and safe, to protect the healthcare workers of today and tomorrow.

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