

BMJ Open Impact of workplace violence and compassionate behaviour in hospitals on stress, sleep quality and subjective health status among Chinese nurses: a cross-sectional survey

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ABSTRACT

Objectives The aim of this study is to describe the current state of workplace violence (WPV) and compassionate behaviour towards nurses and to explain how they affect nurses' stress, sleep quality and subjective health status.

Design A cross-sectional online survey study.

Setting The survey was conducted across eight provinces in China.

Participants A total of 1024 nurses were recruited to complete an online questionnaire survey from February to May 2016 in China.

Results Approximately 75.4% participants had experienced some form of violence. Most of the participants experienced WPV such as verbal violence (65.2%), made difficulties (54.5%), tarnished reputation (37.5%), mob behaviour (34.9%), intimidation behaviour (18.8%), physical violence (14.6%) and sexual harassment (5.9%). In this study, 92.4% participants experienced compassionate behaviour from their coworkers (84.9%), supervisors (67.3%), and from their patients (65.3%). The results show that the exposure to WPV behaviour significantly affected the psychological stress ($\beta=0.295$, $p<0.01$), sleep quality ($\beta=-0.198$, $p<0.01$) and subjective health status ($\beta=-0.252$, $p<0.01$) of nurses. The exposure to compassionate behaviour significantly affected the psychological stress ($\beta=-0.229$, $p<0.01$), sleep quality ($\beta=0.326$, $p<0.01$) and subjective health status ($\beta=0.342$, $p<0.01$) of nurses. The results of the mediation analysis showed that psychological stress is a partial mediator in the relationship between violence and sleep quality ($\beta=-0.458$, $p<0.01$) and between violence and subjective health ($\beta=-0.425$, $p<0.01$). Moreover, psychological stress also partially mediated the relationship between compassionate behaviour and sleep quality ($\beta=-0.473$, $p<0.01$), and between compassionate behaviour and subjective health ($\beta=-0.405$, $p<0.01$).

Conclusion In China, most nurses have experienced different forms of WPV from patients and/or their relatives, as well as experiencing various forms of compassionate behaviour from their coworkers, supervisors and/or patients. This study investigates the prevalence of the different types of WPV and compassionate behaviour. Several aspects of harm to nurses from exposure to violence is confirmed. We found that WPV can damage

Strengths and limitations of this study

- The prevalence of compassionate behaviour towards nurses from three sources is investigated.
- This is the first study that investigates the relationship between WPV and compassionate behaviour and psychological stress, sleep quality and self-reported health status among nurses in China.
- This study highlights the mediation effect of psychological stress in nursing practice, and we demonstrate the interaction mechanisms between these variables.
- The approach of self-reporting by nurses through an online survey may have resulted in some bias in the responses, and a convenience sample was used in this study, which risks the potential problem of a sampling bias.
- Moreover, causation was not established because of the cross-sectional study design.

nurses' health outcomes, while compassionate behaviours were beneficial to their health outcomes. A harmonious nursing environment should be provided to minimise threats to nurses' health status.

INTRODUCTION

The environment surrounding nurses directly affects the quality of care that patients receive as well as the threat to patient safety owing to nursing errors.¹ Workplace violence (WPV) is an important occupational hazard for nurses.² WPV has rapidly increased in health institutions,³ with violence from patients and/or their relatives being the highest risk to nurses given the frequent level of contact with patients and the possibility of facing direct medical disputes. WPV includes the threatening acts of verbal threats, physical assaults and sexual assaults by patients and/or their relatives, or any other individual that poses a risk towards

medical personnel.⁴ Any of these acts of violence could have a negative implication on the health and safety of nurses^{2 5 6} and may threaten the quality of patient care.⁷ Zampieron found that nurses were at the highest risk of aggression when they were overtired, stressed and dissatisfied with their work.⁸ Magnavita's studies have shown that the relationship between violence and stress is mutual: violence causes stress, and the stressed nurses are prone to violence observed, confirmed the relationship between work-related distress and WPV is bidirectional.⁹ WPV exacerbates the high-pressure work environment, which may result in very serious health problems among nurses. Likewise, WPV intensifies nurses' work stress that influence their health status.²

Owing to the characteristics of their work environment, nursing is associated with high levels of psychological stress and professional hardship,^{10 11} whereas compassionate behaviour at work is associated with frequent positive emotions and heightened levels of affective commitment.¹² Frost¹³ identified compassionate behaviour as comprising three interrelated elements: noticing other's suffering, feeling empathy for other's pain and responding to the suffering in some way. Compassionate behaviour can be presented by patients, supervisors and/or coworkers.¹⁴ Previous studies have found that nurses frequently felt that their supervisors and coworkers were willing to listen to them and empathise with their negative emotions and their distress. Nurses obtain the positive mood that arises from the compassionate behaviour, which could effectively increase their job performance and organisational citizenship behaviour. The effects of compassionate behaviours contribute to an organisation's capacity for cooperation. Medical and nursing literature suggest that compassionate behaviour is a moral.¹⁵ While compassionate behaviour is seen as an essential component of patient care, we often ignore nurses who are directly related to and concerned with the recognition and treatment of patient suffering. Compassionate behaviour by patients, supervisors and/or coworkers may influence the health outcomes of nurses.

The work environment influences nurses' stress levels that affect the practice worldwide and nurse-patient relationship in general.¹⁶ The frequency and form of interaction between nurses and patients may lead nurses to experience different forms of violence as well as different forms of compassionate behaviour at work. Nurses are at increased risk of work stress and often experience gastrointestinal discomfort¹⁷ and sleep disorders.¹⁶ The relationship between violence and stress has been studied by many studies,¹⁸ some of which analyse the individual consequences of violence on the behaviour of nurses to patients.¹⁹ The effect of stress was considered, since it is an important cause of deteriorating health outcomes for nurses and of nursing quality.²⁰ Bang and Park²¹ found that the nursing work environment was slightly negative and showed that the nursing work environment and nurses' stress levels were factors affecting their health status. Nurses may neglect their job requirements and

make inadvertent medical errors when psychological stress is accumulated for long periods.¹⁶ Psychological stress of nurses damages their health and leads to a negative impact on patients' recovery in certain ways.²²

Sleep quality is a person's assessment of his or her sleep-related characteristics and whether these qualities are satisfactory or not. Nursing environment may interfere with sleep; in turn, sleep disturbances can endanger the health and safety of nurses.²³ In addition, self-perceived physical health status serves as a predictor for a person's psychological health.¹⁶ Subjective sleep quality and subjective health status constitute a person's overall health evaluation. Both of these elements affect the nurse-patient relationship, organisation development, patient satisfaction and so on.²⁴ Nurses affected by WPV with high levels of work stress tend to report poorer self-perceived health²⁵ and are 20% more likely to experience poor sleep quality than those with low levels of stress.¹⁶ Some nurses who have experienced WPV may react with fewer negative emotions, such as worry, anxiety and/or fear, which may lead to a low level of subjective health status. Others may experience emotional imbalance, higher levels of anxiety, irritability, insomnia and depression, which may influence their sleep quality and simultaneously deteriorate their health status. The relationships between violence, sleep and stress it is good to mention pre-existing studies, which have recently been revised.^{23 26} However, compassionate behaviour is associated with a variety of positive emotions that relieve nurses' work pressure¹² and help in maintaining a pleasant working environment, which has a far-reaching influence on nurses²⁷ by affecting their health status.²² WPV and a compassionate work environment incite different emotional experiences among nurses, which cause different subjective health assessments.

In this study, we attempt to investigate the status of WPV and compassionate behaviours in hospitals. We conducted a cross-sectional study to investigate the frequency of WPV to probe into the relationship of these variables, analyse the mechanism of how WPV and compassionate behaviours affect health outcomes of hospital nurses in China, as well as whether stress mediates the relationship between WPV and compassionate behaviour at work and their health outcomes. We propose the following hypotheses: WPV will be negatively correlated to sleep quality and subjective health status. Psychological stress will mediate the relationship between WPV and sleep quality and subjective health status. On the contrary, compassionate behaviour will be positively correlated to sleep quality and subjective health status. Psychological stress will mediate the relationship between compassionate behaviour and sleep quality and subjective health status.

METHODS

Subjects and procedures

This study is based on a cross-sectional descriptive study, which was conducted from February to May 2016 across

eight provinces in China. An anonymous online questionnaire was completed by nurses in eight provinces. Snowball sampling was used to collect data. First, we randomly selected 60 nurses who were fully informed of the content of this survey from four affiliated hospitals of Harbin Medical University. These 60 nurses were called the 'original deliverers'. We sent a web page link to our questionnaire survey (<https://www.wenjuan.com/>) to their mobile phones. The social media app WeChat developed by Tencent was used as a tool for the transmission and reading. Second, colleagues or nursing classmates of the 'original deliverers' were invited to participate in our online survey after they themselves completed the questionnaire. We encouraged the transfer of questionnaires among nurses. Subsequently, the number of samples increased with the expansion of the network relationship of nurses. The questionnaires were self-administered. When a potential participant received an invitation, they were able to choose to participate or to reject. Once a nurse chose to participate, the website for the online survey recorded their information. Hence, we were able to keep track of how many people were invited to participate. A total of 1362 nurses were invited to participate in the survey, and ultimately 1024 valid questionnaires were used in the final data analysis. The effective response rate was 75.18%.

Patient and public involvement

Patient and public were not involved.

Ethics

A written informed consent could not be received because of the anonymous survey approach. Hence, oral informed consent for the survey was approved by the ECHMU and obtained from each nurse. The research described in the present article meets the ethical guidelines of the ethics committee of the College of Public Health, Harbin Medical University, and the project has been approved by the Ethics Committee of the Harbin Medical University (ECHMU). Once a questionnaire was completed, we assume that the nurses have orally agreed to participate in our survey with reference to Wen's criteria.²⁸

Measures

Demographic variables: gender, age, work experience, marital status, professional position, education level and work shift.

Measurement of the WPV ($\alpha=0.85$)

To assess exposure to WPV caused by patients and/or their relatives, a seven-item measure was used.²⁹ Nurses were asked the following question, 'During the past year, have you found yourself in any of the following situations by a patient and/or their relatives?'. Responses were scored on a six-point scale from 0 (never) to 6 (every day). Response items included verbal violence (abuse language, sarcasm, indignity, effrontery, shouting and so on), difficult situations (nitpicky demands, unreasonable requests, non-compliance, heckling and so on), tarnished reputation

(baseless charges or complaints, slander, accusations that damaged reputation and so on), mob behaviour (destruction of public facilities, booing, gathering together to stir up trouble, public disorder, malicious photo taking and so on), intimidation behaviour (oral or written threats, glower, waving clenched fists, threats with weapons, stalking and so on), physical violence (biting, pushing, fighting, cutting, throwing things towards body and so on) and sexual harassment (including rape or attempted rape). According to the coding criteria, 'never' and 'rarely' were coded as not having experienced WPV from patients and/or their relatives; thus, these responses were assigned a score of '0'. Other situations were assigned a '1' to indicate that the nurses have experienced that sort of violence.

Measurement of compassionate behaviour ($\alpha=0.69$)

The scale is developed by Lilius *et al.*¹⁴ Respondents were asked to measure compassionate behaviour that they experienced at work using a 5-point Likert scale 1 (never) to 5 (very frequently) from their (A) patients, (B) supervisor and/or (C) coworkers. High scores indicate high levels of compassionate behaviour. Considering the suggestion of the original author and because we aim to understand the behaviours that respondents experienced as compassionate, and because we do not want to restrict the respondents' thinking to only certain kinds of behaviour, we chose not to define compassionate behaviour for nurses in our survey. Composite index variables were calculated for all scales by averaging across items.

Measurement of psychological stress, sleep quality and subjective health

A single item was adopted to measure the psychological stress of nurses,³⁰ which was 'Stress is a condition in which a person, for some mental reason, falls into a state of nervous tension, restlessness, tension, anxiety, or inability to fall asleep at night. Have you felt this kind of pressure recently?' (a possible score of 1 (not at all) to 5 (very much)). High scores reflect high levels of psychological stress. Past literature has confirmed that an item questionnaire has high validity and sensitivity and that it can also measure the level of occupational expectations of new nurses.³¹ Two single items were addressed together to measure nurses self-reported health outcomes. Subjective sleep quality³² was measured by the question 'How would you evaluate your most recent night's sleep?'. The response ranged from very bad (1) to very good (4). We consulted the study by Fein and Skinne³³ where the overall subjective health was estimated by a widely used single-item measure ('In general, how would you rate your health?', 4=excellent, 3=very good, 2=good, 1=fair or poor). High scores reflect high levels of health status.

Statistical analysis

We used the SPSS statistical software for Windows V.17.0 for our analysis. Demographic characteristics of the nurses

were collected to report sample information. Pearson's correlation coefficients were calculated to estimate the correlation between the exposure to WPV and compassionate behaviour, psychological stress, sleep quality and self-subjective health status. A series of hierarchical linear regression analyses were performed to examine our hypotheses according to a procedure that was suggested by Baron and Kenny.³⁴ Analysing mediation involved three steps.³⁵ The first step is to establish that the independent variable influences the mediator (*M2* and *M12*). The second step is to demonstrate that the independent variable influences the dependent variables (*M4*, *M8*, *M14* and *M18*). The third and last step is to demonstrate that the mediator influences the dependent variables (*M5*, *M9*, *M15* and *M19*) when the independent variable is controlled (*M6*, *M10*, *M16* and *M20*). In this final step, the effect of the independent variable on the dependent variables is significantly reduced when the mediator is in the model partially mediation is indicated.³⁶

We provide values including F , R^2 and R^2 -changes, and the fit of the model was assessed with R^2 . Standardised regression coefficients (β), and p values were calculated for each step in the regression model. Statistical significance was defined as $p < 0.05$ (two tailed).

RESULTS

Demographic information of the sample

A summary of demographic variables can be seen in table 1.

A summary of demographic variables can be seen in table 1. As shown in table 2, about 65.2% of participants reported that they had encountered verbal violence within the last 12 months, which is the most common type of WPV in hospitals. Other incidence rates of WPV from highest to lowest are: difficult situations (54.5%), tarnished reputation (37.5%), mob behaviour (34.9%), intimidation behaviour (18.8%), physical violence (14.6%) and sexual harassment (5.9%).

We aggregated the experience of the various types of WPV to ascertain the total number of incidents that occurred within the previous 12 months. As shown in table 3, 75.4% of participants reported that they had experienced one or more types of WPV during the previous 12 months. Furthermore, 17.1%, 15.3%, 13.8%, 13%, 8.7%, 5.1% and 2.5% of participants reported that they had suffered one to seven types of violence, respectively.

According to the coding criteria, the response 'never' was coded as not having experienced compassionate behaviour from their coworkers, supervisor and/or patients; thus, these responses were assigned a score of '0'. Other situations were assigned a '1' indicating that nurses had received compassionate behaviour. As shown in table 4, about 84.9% of participants reported that they had encountered compassionate behaviour from their coworkers within the last 12 months, which was the highest incidence rate by source of compassionate behaviour. The other incidence rates of compassionate behaviour

Table 1 Characteristics of the respondents (n=1024)

Characteristic	N	%
Age (years)		
20–30	709	69.2
31–40	253	24.7
41–50	49	4.8
51+	4	0.4
Missing value	9	0.9
Gender		
Male	87	8.5
Female	936	91.4
Missing value	1	0.1
Education		
Technical secondary school or below	38	3.7
College degree	226	22.1
Bachelor's degree or above	757	73.9
Missing value	3	0.3
Marital status		
Unmarried	496	48.4
Married	507	49.5
Divorced or loss of spouse	13	1.3
Missing value	8	0.8
Professional categories		
Nurse	355	34.7
Nurse practitioner	473	46.2
Nurse supervisor	166	16.2
Vice director/director of junior	29	2.8
Missing value	1	0.1
Type of work		
Work during the day	296	28.9
Night shifts	727	71.0
Missing value	1	0.1

from highest to lowest are: from their coworkers (84.9%), from their supervisor (67.3%) and from their patients (65.3%).

Table 2 The incidence rate and rank ordering of WPV against nurses within last 12 months (n=1024)

Violence styles	N	%	Total	Rank
Verbal violence	667	65.2	1023	1
Made difficulties	557	54.5	1022	2
Smear reputation	384	37.5	1023	3
Mobbing behaviour	357	34.9	1022	4
Intimidation behaviour	192	18.8	1022	5
Physical violence	149	14.6	1023	6
Sexual harassment	60	5.9	1023	7

WPV, workplace violence.

Table 3 Incidence rate of accumulated types of WPV against nurses within last 12 months (n=1024)

Accumulated violence	N	%	Valid per cent	Cumulative percentages
0	250	24.4	24.6	24.6
1 type	174	16.8	17.1	41.7
2 types	156	15.1	15.3	57.0
3 types	140	13.5	13.8	70.7
4 types	132	12.8	13.0	83.7
5 types	89	8.6	8.7	92.4
6 types	52	5.0	5.1	97.5
7 types	25	2.4	2.5	100

WPV, workplace violence.

As shown in table 5, 92.4% of participants reported that they had experienced one or more types of compassionate behaviour during the previous 12 months, which indicated that the prevalence of compassion toward nurses is 92.4%. Furthermore, 14.6% of participants reported that they had experienced compassionate behaviour from one source, 30.3% from two sources and 47.4% from all three sources.

Correlation between the variables

The mean, SD and Pearson’s correlation coefficients of the continuous variables are presented in table 6. All variables are significantly correlated to each other; WPV is negatively correlated to compassionate behaviour ($r=-0.224$, $p<0.01$), sleep quality ($r=-0.194$, $p<0.01$) and subjective health status ($r=-0.254$, $p<0.01$) and was positively correlated with stress ($r=0.302$, $p<0.01$). Compassionate behaviour was positively correlated to sleep quality ($r=0.334$, $p<0.01$) and subjective health status ($r=0.346$, $p<0.01$) and was negatively correlated to stress ($r=-0.234$, $p<0.01$). Stress was negatively correlated with sleep quality ($r=-0.463$, $p<0.01$) and subjective health status ($r=-0.463$, $p<0.01$). There was a positive correlation between sleep quality and subjective health status ($r=0.597$, $p<0.01$).

Multiple linear hierarchical regression models

The results show that the exposure to WPV behaviour significantly affected the psychological stress ($\beta=0.295$, $p<0.01$), sleep quality ($\beta=-0.198$, $p<0.01$) and subjective health status ($\beta=-0.252$, $p<0.01$) of nurses. The exposure to compassionate behaviour significantly affected the psychological stress ($\beta=-0.229$, $p<0.01$), sleep quality

Table 4 The incidence rate and rank ordering of compassion experience nurses within last 12 months (n=1024)

Compassion styles	N	%	Total	Rank
From their coworkers	868	84.9	1022	1
From their supervisor	687	67.3	1021	2
From their customer	666	65.3	1020	3

($\beta=0.326$, $p<0.01$) and subjective health status ($\beta=0.342$, $p<0.01$) of nurses. The results of the mediation analysis showed that psychological stress is a partial mediator in the relationship between violence and sleep quality ($\beta=-0.458$, $p<0.01$) and between violence and subjective health ($\beta=-0.425$, $p<0.01$) as shown in table 7 and in table 8. Moreover, psychological stress also partially mediated the relationship between compassionate behaviour and sleep quality ($\beta=-0.473$, $p<0.01$), and between compassionate behaviour and subjective health ($\beta=-0.405$, $p<0.01$) as shown in table 8.

DISCUSSION

Approximately 75.4% of survey participants reported they had experienced some form of WPV, and nearly 70% experienced multiple forms of violence types. Compared with the USA, WPV is more serious in Chinese nursing workplaces.¹⁴ Compared with other professions, nurses have higher rates of non-fatal workplace assault injuries.¹¹ Our results show that 92.4% of participants received compassionate behaviour from their coworkers, supervisors and/or work itself. Approximately 50% of the participants received compassionate behaviour from all three sources. It is shown that compassionate behaviour in medical organisations is common. In the nursing workplace, the incidents of both WPV and compassionate behaviour are high.

The influence of WPV on health outcomes

This study is consistent with findings from prior research. The exposure to WPV has a significant influence on work stress and health outcomes among nurses.³⁷ This study also presents a new theoretical contribution, which shows that the exposure to WPV has a direct and indirect effect on the health outcomes of nurses. Moreover, work stress has a partially mediating effect on their relationship. High job stress caused by WPV may result in poor sleep quality and negatively affect physical and psychological health. Namely, WPV reduced subjective sleep quality and subjective health status by elevating the work stress of nurses. Previous studies showed that 82.33% of nurses performing shift work experienced poor sleep quality.¹⁶ Nurses who experienced WPV have emotional fluctuations, increased anxiety about their jobs, and even reported waking up intermittently at night, which

Table 5 Incidence rate of accumulated types of compassion experience nurses within last 12 months (n=1024)

Accumulated compassion	N	%	Valid per cent	Cumulative percentages
0	79	7.6	7.8	7.8
1 type	148	14.3	14.6	22.3
2 types	308	29.8	30.3	52.6
3 types	482	46.6	47.4	100

Table 6 Means (M), SD and correlations of variables (n=1024)

Variables	M	SD	N	WPV	Compassion	Stress	Sleeping quality	Subjective health status
WPV	1.1	0.77	1018	1				
Compassion	3.06	0.767	1017	-0.224**	1			
Stress	13.74	4.84	1008	0.302**	-0.234**	1		
Sleeping quality	2.38	0.793	1022	-0.194**	0.334**	-0.463**	1	
Subjective health status	2.58	0.708	1022	-0.254**	0.346**	-0.463**	0.597**	1

decreased their sleep quality.¹⁶ Violent incidents might result in some serious adverse effects on emotions, cognitive processing, increasing nurses' workload on taking care of hospitalised patients, which further elevates stress among nurses, reducing sleep quality, increasing fatigue and weakness in their daily lives, thereby reducing the overall quality of their work and life. Sleep deprivation results in nursing errors and accidents and can affect nurses' personal health.³⁸ WPV and their influence lead to negative effect on both physical and mental health for nurses under a long circle.

The influence of compassionate behaviour on health outcomes

This study found that high levels of compassionate behaviour at work was significantly associated with nurses' health outcomes. As indicated in previous studies,³⁹ compassionate behaviour at work was beneficial in

improving subjective sleep quality and subjective health status. It was shown that nurses who experienced compassionate behaviour at work reported a higher score on their subjective sleep quality and subjective health status than those who did not. Result suggested that the compassionate behaviours contributed to the promotion of positive health outcomes. Compassionate behaviour at work such as daily interactions, careful listening and respecting privacy prompted nurses to hold positive feelings⁴⁰ and conscious emotional experiences that stimulate cognitive processing after certain outcomes or behaviours.⁴⁰ Jane E Dutton found that acts of compassion created renewable resources of trust, quality connections, positive emotions, reaffirm shared values of dignity, and mutual respect.²⁹ In fact, nurses, tiring from their work, can be satisfied with expressions of love and care from others, and thus, compassionate behaviour at work may help nurses balance

Table 7 Multiple hierarchical linear regression models of variables (WPV, psychological stress, sleep quality and subjective health) (n=1024)

Variables	Psychological stress		Sleep quality				Subjective health			
	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Control variables										
Age	0.013	-0.022	-0.028	-0.005	-0.021	-0.015	-0.067	-0.037	-0.058	-0.046
Gender	0.055	0.043	-0.005	0.004	0.022	0.023	-0.013	-0.002	0.12	0.016
Service years	0.034	0.009	-0.063	-0.046	-0.044	-0.041	-0.103	-0.081	-0.087	-0.078
Education	-0.003	0.003	-0.024	-0.027	-0.024	-0.025	-0.02	-0.025	-0.025	-0.024
Marital status	0.079	0.04	0.037	0.063	0.073	0.082	-0.01	0.023	0.024	0.04
Professional categories	0.069	0.58	-0.062	-0.055	-0.032	-0.028	-0.026	-0.016	0.002	0.008
Mediating variable										
Psychological stress					-0.474**	-0.458**			-0.463**	-0.425**
Independent variable										
WPV		0.295**		-0.198**		-0.063**		-0.252**		-0.127**
F	2.493*	15.578**	1.441	6.92**	42.645**	38.193**	1.922	11.142**	40.953**	38.19**
R ²	0.015*	0.099**	0.009	0.047**	0.23**	0.229**	0.011	0.073**	0.223**	0.236**
ΔR ²	0.015*	0.084**	0.009	0.038**	0.221**	0.003**	0.011	0.061**	0.211**	0.014**

*P<0.05; **p<0.01.

WPV, workplace violence.

Table 8 Multiple hierarchical linear regression models of variables (compassion, psychological stress, sleep quality and subjective health) (n=1024)

Variables	Psychological stress		Sleep quality				Subjective health			
	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20
Control Variables										
Age	0.009	-0.007	-0.025	-0.002	-0.021	-0.021	-0.061	-0.037	-0.058	-0.04
Gender	0.05	0.061	0.002	-0.013	0.022	0.026	-0.008	-0.024	0.012	0.001
Service years	0.037	0.017	-0.61	-0.033	-0.044	-0.043	-0.102	-0.073	-0.087	-0.066
Education	0.002	0.018	-0.023	-0.047	-0.024	-0.022	-0.025	-0.5	-0.025	-0.043
Marital status	0.081	0.083	0.036	0.033	0.073	0.074	-0.013	-0.016	0.024	0.018
Professional categories	0.071	0.049	-0.064	-0.033	-0.032	-0.03	-0.03	-0.003	0.002	0.023
Mediating variable										
Psychological stress					-0.474**	-0.473**			-0.315**	-0.405**
Independent variable										
Compassion		-0.229**		0.326**		0.229**		0.342**		0.249**
F	2.515	10.097**	1.441	17.944**	42.645**	47.592**	1.936	20.433**	40.953**	48.008**
R ²	0.015	0.066**	0.009	0.112**	0.23**	0.278**	0.012	0.126**	0.223**	0.279**
ΔR ²	0.015	0.051**	0.009	0.104**	0.221**	0.049**	0.012	0.114**	0.211**	0.058**

*P<0.05; **p<0.01.

their emotion conflicts. Thus, they are more willing to devote themselves to their career, maintain a positive attitude in facing work challenges and actively solve work problems. Compassion as a form of care in the workplace is simple but works well to release pressure and anxiety among nurses. It contributes to nurses' sleep quality and health status (ie, receiving different forms of compassionate behaviour can help to achieve healthy outcomes through the mediating role of psychological stress). Compassionate behaviour helps nurses remain empathetic and compassionate professionals and improve the development of nursing, face work pressure, work overloads and challenges in their daily nursing tasks.

Limitations

Although some significant discoveries were presented in this study, there are several limitations that must be mentioned. First, a convenience sample was used in this study, which risks a potential problem of a sampling bias. Moreover, a total of 1024 nurses is a small sample when compared with the entire Chinese nurse population. Thus, the findings cannot be generalised to Chinese nurses in general. Second, a cross-sectional nature was not helpful in establishing a causal relationship between WPV, compassionate behaviour, stress, sleep quality and subjective health status. Thus, an important direction for future research is longitudinal studies. Third, the data were self-reported by the nurses and, to some extent, may have resulted in a response bias from social desirability or negative affect. Nurses may have overestimated or underestimated the association between study variables.

We used foreign design scales that ignored cross-cultural adaptability in this study; thus, this area is worth attracting academic attention in the future. Fourth, the method of measurement of sleep quality is very poor, which we admit is a limitation of the study.

CONCLUSION

In this survey, a total of 75.4% participants reported they had experienced some form of exposure to WPV. About 92.4% experienced compassionate behaviour from their coworkers, supervisor or patients. Exposure to WPV has a significantly negative influence on the work stress and health outcomes of nurses. This study also makes a new theoretical contribution by showing that the exposure to WPV has a direct effect and an indirect effect on the health outcomes of nurses. Work stress had a partially mediating effect on their relationship. High levels of compassionate behaviour at work was significantly associated with health outcomes among nurses, as reported in previous studies. Compassionate behaviour was beneficial in improving subjective sleep quality and subjective health status. There is room for improvement to relieve exposure to WPV by lowering the work stress of nurses. A harmonious work environment for nurses should be provided as the damage to health outcomes due to WPV is clear.

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