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Cross-sectional study of workplace violence on work engagement among Chinese nurses: the mediating role of psychological resilience

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ABSTRACT

Objectives This study aimed to investigate the status of workplace violence, psychological resilience and work engagement, and explore the potential mediating role of psychological resilience in the relationship between workplace violence and work engagement among Chinese nurses.

Design A cross-sectional survey was conducted among a convenience sample of clinical registered nurses.

Setting A convenience sample of clinical registered nurses was recruited from affiliated hospitals of Hunan University of Chinese Medicine.

Participants A total of 1725 questionnaires were received, of which 1571 were deemed valid, resulting in an effective response rate of 91.07%. The final sample consisted of 1571 clinical registered nurses with a mean age of 31.65±7.16 years.

Outcome measures Data were collected through an online questionnaire comprising a general information form, the Workplace Violence Scale (WVS), Connor-Davidson Resilience Scale (CD-RS) and Utrecht Work Engagement Scale (UWES). Descriptive analysis, correlation analysis, and mediation analysis were performed using IBM SPSS Statistics software.

Results This cross-sectional investigation recruited a convenience sample of 1571 clinical registered nurses, who encountered multiple types of workplace violence in the past year. Pearson correlation analysis indicated negative associations between workplace violence and work engagement ($r=-0.505$, $p<0.01$), as well as between workplace violence and psychological resilience ($r=-0.523$, $p<0.01$). Mediation analysis revealed that psychological resilience partially mediated the relationship between workplace violence and work engagement, with the mediation effect accounting for 66.67% of the total effect.

Conclusions Nurses exposed to workplace violence demonstrated decreased work engagement, while psychological resilience acted as a protective factor to mitigate the adverse impacts of workplace violence on work engagement. These findings provide a theoretical basis for interventions that equip nurses with resilience to combat workplace violence and improve work engagement.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The study used a substantial sample of 1571 clinical registered nurses, enhancing the representativeness and generalisability of the findings within the context of Chinese hospitals.
⇒ The study provided insights into the mediating role of psychological resilience in the relationship between workplace violence and work engagement, offering a nuanced understanding of the dynamics between these variables.
⇒ The reliance on self-reported measures may introduce recall or report bias, potentially affecting the accuracy of the data and the validity of the results.
⇒ The predominantly female sample reflects the gender composition of the nursing profession but may limit the generalisability of the findings to male nurses.

INTRODUCTION

Workplace violence (WPV) refers to action, incident or behaviour where staff are abused, threatened or assaulted in work circumstances, which occur in the forms of verbal violence, physical violence and sexual violence.[1 2] Workplace violence against healthcare workers represents a serious health issue and major occupational hazard worldwide, which impairs personal lives and professional work of healthcare staff. Studies across the world converge to support the prevalence of workplace violence within healthcare sectors. For example, a meta-analysis examined the prevalence of workplace violence against healthcare workers, which included 253 eligible studies containing 331 544 healthcare workers, reported that the prevalence of overall workplace violence was 61.9%, the prevalence of physical violence was 24.40%, the prevalence of verbal violence was 24.48%, and the prevalence of sexual violence was 5.27% in the past year.[3] Likewise, another meta-analysis examined the prevalence of workplace violence against healthcare workers in China, which included 47 original studies covering 81 771 healthcare professionals, reported that the prevalence

of overall workplace violence was 62.4%, the prevalence of physical violence was 13.7%, the prevalence of verbal violence was 61.2%, and the prevalence of sexual violence was 6.3%.[4] Workplace violence represents one of the most complex professional hazards in healthcare systems which deserves further attention and investigation.

Nurses constitute the largest group of healthcare workers in healthcare organisations, comprising 59% of healthcare professionals around the world.[5] However, nurses constitute one of the professional groups most exposed to workplace violence among healthcare sectors. Studies from diverse countries confirm the prevalence of workplace violence against nurses. For instance, a meta-analysis examined the incidence of workplace violence against nurses among Chinese hospitals, which included 38 original studies involving 22 968 nurses, reported that the incidence of workplace violence was 71%, the incidence of physical violence was 14%, the incidence of verbal violence was 63%, and the incidence of sexual violence was 6% in the past year.[6] The World Medical Association defined workplace violence against health personnel as an international emergency which undermines the foundations of healthcare systems.[7] Nurses witness and experience workplace violence, which not only causes stress and hassle for nurses but also impairs medical orders and health services in hospitals.[8] Nurses confront the highest risk of exposure to workplace violence among healthcare workers, which increases job dissatisfaction and decreases the work performance of nurses.[9]

Work engagement is a multidimensional and motivational construct which entails the overall energy and effort investment of staff in their work. Work engagement comprises dimensions of personal vigour, absorption and dedication.[10 11] Vigour is manifested as a high degree of energy and flexibility at work. Absorption is depicted as a state of complete concentration and pleasant immersion in work. Dedication is reflected as an experience of profound commitment to work, coupled with a sense of importance and enthusiasm. Work engagement constitutes an optimal predictor for both individual productivity and organisational performance, which reduces turnover intention, job burnout and work absenteeism of nurses, and ensures service quality, patient safety and sustainable development of hospitals.[12] Workplace violence towards nurses represents a significant concern, which not only damages the health and safety of affected nurses but also impairs the job performance and work productivity of victimised nurses.[13] For instance, a large cross-sectional survey of 1502 nurses across 23 hospitals in China found that exposure to workplace violence was a key driver of job burnout and job dissatisfaction among this sample.[14] Similar detrimental impacts of workplace violence on nurse outcomes have been reported elsewhere, with studies demonstrating that exposure to workplace violence undermined work attitudes and induced job burnout among nurses.[15]

Psychological resilience is a personality trait or personal resource that enables individuals to adapt positively and recover effectively in response to stress and adversity.[16] Psychological resilience is a dynamic process in which individuals use external resources and internal adjustments to achieve positive adaptation and effective recovery under stressful situations or adverse circumstances. Nurses with psychological resilience are inclined to leverage external resources and mobilise internal adjustments, thereby more likely to address work pressures and achieve personal growth.[17] Psychological resilience can serve as a protective factor to buffer the detrimental impacts of workplace violence on nurses' outcomes. For example, a cross-sectional study of 118 mental health nurses in Israel found that resilience acted as a protective factor to mitigate the negative impacts of workplace violence on life satisfaction among this population.[18]

Despite the wide recognition of the detrimental effects of workplace violence on work engagement, the specific mechanisms by which workplace violence influences work engagement remain underexplored. Further investigation is therefore warranted to elucidate the pathways through which workplace violence affects nurses' outcomes. Thus, the present study sought to examine the impacts of workplace violence on work engagement among Chinese nurses and explore the mechanism of this relationship within the Chinese cultural context.

Objectives

The primary objectives of this study were to:

1. Investigate the prevalence of workplace violence among Chinese nurses.
2. Assess the levels of psychological resilience and work engagement among Chinese nurses.
3. Examine the relationships between workplace violence, psychological resilience and work engagement among Chinese nurses.
4. Explore the potential mediating role of psychological resilience in the relationship between workplace violence and work engagement among Chinese nurses.

METHOD

The present study was designed and reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional research.

Design and setting

A cross-sectional survey was conducted among a convenience sample of clinical registered nurses from affiliated hospitals of Hunan University of Chinese Medicine. Hunan University of Chinese Medicine was founded in 1934, which is one of the first Chinese medicine universities to establish state level key disciplines. The university has 15 affiliated hospitals, including two directly affiliated hospitals and 13 indirectly affiliated hospitals. The First Affiliated Hospital was established in 1963, which is the first tertiary-level grade A traditional Chinese medicine hospital in Hunan Province. The hospital has 1800

authorised beds, which handles over 1.8 million outpatient visits and about 80 000 inpatient admissions per year.

Participants

The study participants were clinical registered nurses recruited through a convenience sampling method from affiliated hospitals of Hunan University of Chinese Medicine. Inclusion criteria were set as: nurses who work in these affiliated Chinese medicine hospitals; obtained a Chinese registered nurse license; engaged in clinical patient care for at least 1 year; and provided informed consent. Exclusion criteria were set as: nurses who were not employed by hospitals, such as training nurses and nursing interns.

Sample size

The required sample size was calculated using the formula $n=Z^2_{\alpha/2}P(1-P)/\delta^2$, where n denotes the sample size, α represents the type I error set at 0.05, $Z_{\alpha/2}$ is 1.96 corresponding to this 5% type I error and δ is the absolute error set at 0.03. The prevalence of workplace violence was set as a reference value of 65.8%.[19] A sample size of 961 was derived, and a minimum sample size of 1154 was required given a 20% of invalid responses.

Recruitment

An online questionnaire was administered to a convenience sample of clinical registered nurses given the intense work schedules and limited leisure time of clinical staff. Wenjuanxing was used to create the online questionnaires, and WeChat was employed to distribute the online questionnaires. All questionnaire items were imported into Wenjuanxing, which generates a web link and a quick response code for the online questionnaire. The web link and quick response code of the online questionnaire were then distributed via WeChat, and nurses clicked the web link or scanned the quick response code to access the online questionnaire. The survey was anonymous, and nurses were asked to complete the questionnaire independently.

Variables and measurements

The online questionnaire comprised a general information form, the Workplace Violence Scale, the Connor-Davidson Resilience Scale, and the Utrecht Work Engagement Scale.

General information form

The general information form was used to gather demographic characteristics of these nurses, including gender, ethnicity, age, occupational department and professional title. Gender was categorised as 'male' and 'female'. Ethnicity was categorised as 'Han nationality' and 'Other nationality'. Professional title was categorised as 'Junior nurse', 'Senior nurse', 'Chief nurse', and 'Nurse consultant'. Occupational department was categorised as 'Internal medicine department', 'Surgery department', 'Emergency medicine department', and 'Intensive care unit department'.

Workplace Violence Scale

The Chinese version of the Workplace Violence Scale (WVS) was employed to assess nurses' experiences of workplace violence during the past year.[20 21] This scale has been validated and used in Chinese contexts, exhibiting high reliability and validity across different studies.[22] The WVS contained 5 dimensions: physical assault, emotional abuse, threat, verbal sexual harassment and sexual abuse. Each item was rated on a 4-point scale ranging from '0=none' to '3=more than three times'. The scores correspond to different frequencies of workplace violence exposure, with 0 indicating no exposure, 1 indicating exposure once, 2 indicating exposure two or three times and 3 indicating exposure more than three times. The total score is calculated by summing the grades from each item, with higher scores indicating more experiences of workplace violence. A total score of 0 indicated that the nurse did not experience workplace violence, and a total score of 1–15 indicated that the nurse experienced workplace violence. The Cronbach's α coefficient for the scale was 0.870, indicating favourable internal consistency in this study.

Connor-Davidson Resilience Scale

The Chinese version of the Connor-Davidson Resilience Scale (CD-RS) was a self-administered questionnaire used to measure nurses' psychological resilience.[23] This scale has been extensively used among Chinese populations, exhibiting favourable reliability and predictive validity.[24] The Cronbach's α coefficients of 3 subscales were 0.88, 0.80 and 0.60, respectively.[25] The CD-RS scale comprised 25 self-rated items across 3 dimensions, including optimism (4 items), strength (8 items) and tenacity (13 items). Each item was scored on a 5-point scale ranging from 0 'not true at all' to 4 'true nearly all the time'. The total score of the scale was the sum of the responses of each item, with higher scores indicating better resilience capacity. The Cronbach's α coefficient for the scale was 0.894, indicating favourable internal consistency in this study.

Utrecht Work Engagement Scale

The Chinese version of Utrecht Work Engagement Scale (UWES) was employed to measure nurses' work engagement.[26 27] This scale has been widely used among healthcare workers, demonstrating acceptable internal consistency and discriminant validity.[28] The Cronbach's α coefficients of three subscales were 0.767, 0.735 and 0.753, respectively. This scale comprised 9 items across 3 dimensions, including vigour (3 items), absorption (3 items) and dedication (3 items). Each item was scored on a 7-point scale ranging from 0 'never' to 6 'always'. The total score of the scale was the sum of the responses of each item, with higher scores indicating greater work engagement. The Cronbach's α coefficient for the scale was 0.840, indicating favourable internal consistency in this study.

Data analysis

The data were organised in Microsoft Excel and analysed using the IBM SPSS Statistics V.22.0. A two-tailed p value of less than 0.05 was considered statistically significant for all analyses. Descriptive analysis was performed to calculate means and SD for quantitative data and frequency and percentage for qualitative data. Independent samples *t*-tests and one-way ANOVA were adopted to assess the differences in workplace violence, psychological resilience and work engagement across demographic variables. Pearson's correlation analysis was performed to examine the bivariate relationships between workplace violence, psychological resilience and work engagement. Multiple linear regression analysis was conducted to investigate the predictive effects of demographic variables, workplace violence, and psychological resilience on work engagement.

The PROCESS Macro for SPSS was used to perform mediation analysis, examining the mediating role of psychological resilience on the relationship between workplace violence and work engagement.[29–31] Workplace violence was entered as a predictor, psychological resilience was entered as a mediator and work engagement was entered as an outcome. Model 4 in the PROCESS macro was employed to estimate the direct and indirect effects, along with the 95% CIs using the bootstrap resampling method (5000 bootstrap samples). The mediation effect was considered statistically significant when the 95% CI for the indirect effect did not contain 0.

Ethical considerations

This study obtained ethical approval from the Ethics Committee of The First Hospital of Hunan University of Chinese Medicine (Reference number: HN-LL-ZFKY-2023-001-01). All procedures were conducted in accordance with the principles of the 1964 Declaration of Helsinki and its subsequent amendments. Informed consent was obtained from all participants before they completed the questionnaire. Given the anonymous survey approach, written informed consent was not required.

Patient and public involvement

Patients and the public were not involved in the design, conduct, reporting, or dissemination plans of this research.

RESULT

A total of 1725 questionnaires were received, of which 1571 were deemed valid, resulting in an effective response rate of 91.07%. The final sample comprised 1571 clinical registered nurses who provided usable responses, surpassing the minimum sample size calculated a priori for this investigation.

Table 1 The general characteristics of the investigated nurses (n=1571)

Item	Category	N	%
Gender	Male	60	3.82
	Female	1511	96.18
Age		20–53 31.65±7.16	
Ethnicity	Han nationality	1522	96.88
	Other nationality	49	3.12
Professional title	Junior nurse	486	30.94
	Senior nurse	820	52.20
	Chief nurse	257	16.36
	Nurse consultant	8	0.51
Occupational department	Internal medicine department	441	28.07
	Surgery department	465	29.60
	Emergency medicine department	297	18.91
	Intensive care unit department	368	23.42

Demographic characteristics

The demographic characteristics of the participants are summarised in table 1. The sample was predominantly female, comprising 96.18% females and 3.82% males. The age of the participants ranged from 20 to 53 years, with a mean age of 31.65±7.16 years. In terms of ethnicity, the majority of the sample were Han Chinese (96.88%), while 3.12% were from other ethnic groups. With regard to professional title, 30.94% were junior nurses, 52.20% were senior nurses, 16.36% were chief nurses and 0.51% were nurse consultants. With relation to the occupational department, 28.07% were from the internal medicine department, 29.60% from the surgery department, 18.91% from the medical department, and 23.42% from the intensive care unit department.

Descriptive statistics

Table 2 displays the descriptive statistics results of workplace violence, psychological resilience and work engagement. The total score of WVS was 1.89±2.85, the total score of UWES was 29.98±8.34 and the total score of CD-RISC was 62.58±5.37.

WVS scores were significantly different across age, ethnicity, occupational department and professional title (all p<0.05). CD-RISC scores were significantly different across age, ethnicity, occupational department and professional title (all p<0.05). UWES scores were significantly different across gender, age, occupational department and professional title (all p<0.05) (as shown in online supplemental table S1).

Correlation analysis

Table 3 presents the Pearson correlation analysis results of workplace violence, psychological resilience and work

Table 2 The scores of workplace violence, psychological resilience and work engagement (n=1571)

Scale	Dimension	M±SD
WVS	Total score	1.89±2.85
	Physical assault	0.38±0.69
	Emotional abuse	0.49±0.90
	Threats	0.35±0.70
	Verbal sexual harassment	0.35±0.65
	Sexual abuse	0.30±0.54
CD-RS	Total score	62.58±5.37
	Optimism	10.04±2.18
	Strength	19.97±3.12
	Tenacity	32.57±3.95
UWES	Total score	29.98±8.34
	Vigour	10.12±3.49
	Dedication	9.95±3.67
	Absorption	9.91±2.99

engagement. Pearson correlation analysis revealed that workplace violence was negatively correlated with psychological resilience (r=−0.523, p<0.01) and work engagement (r=−0.505, p<0.01).

Multiple linear regression analysis

Table 4 presents the multiple linear regression analysis of the predictive effects of demographic variables, workplace violence and psychological resilience on work engagement. The multiple regression analysis revealed that work engagement was significantly influenced by workplace violence and psychological resilience (all p<0.05).

Mediation effect analysis

Tables 5 and 6 display the mediation effect of psychological resilience on the relationship between workplace violence and work engagement. Mediation analysis revealed that psychological resilience partially mediated the relationship between workplace violence and work engagement, with the mediation effect accounting for 66.67% of the total effect.

DISCUSSION

Workplace violence represents a serious public health issue and major occupational hazard worldwide. Nurses confront the highest risk of exposure to workplace violence, which increases job dissatisfaction and decreases work performance. Previous studies mainly examined the incidence assessment and risk identification of workplace violence, and relatively few studies investigated the impacts of workplace violence on work outcomes. Thus, the present study investigated the influence of workplace violence on work engagement and explored the mediating role of psychological resilience in this link among Chinese nurses.

Table 3 The correlation analysis for workplace violence, psychological resilience and work engagement

Variables	1	2	3
Workplace violence	1.00		
Work engagement	−0.505*	1.00	
Psychological resilience	−0.523*	0.732*	1.00

*P <0.01

The present study observed that nurses encountered multiple types of workplace violence during the past year, with emotional abuse being the most prevalent and sexual abuse being the least common. The high prevalence of workplace violence among nurses in this study aligned with findings from previous research. A large number of cross-sectional surveys surged to investigate the prevalence of workplace violence among nurses across diverse backgrounds, which converged to implicate nurses as one of the occupational groups most vulnerable to workplace violence. The wealth of studies became apparent in a meta-analysis from Liu *et al*[3] which included 253 original studies published during the last 30 years reporting on the prevalence of workplace violence against healthcare workers. Specifically, a cross-sectional survey of 3835 nurses from 28 hospitals over 13 provinces investigated the prevalence of workplace violence against Chinese nurses, found that 25.77% experienced physical assault, 61.25% experienced verbal abuse, 36.75% experienced threats and 2.76% experienced sexual harassment in the past year.[32] Similarly, a cross-sectional survey of 50 nurses investigated the prevalence of workplace violence among professional nurses in Hong Kong found that 44.6% experienced workplace violence, 39.2% experienced verbal abuse, 22.7% experienced physical assault and 1.1% experienced sexual harassment in the past year.[33] The prevalence and seriousness of workplace violence against nurses urging health systems and medical institutions to enact organisational policies and professional guidelines aimed at preventing workplace violence and fostering harmonious work environments. The conclusion of this study in concerted with findings of previous investigations indicated that nurses encountered various forms of workplace violence, underscoring the importance of identifying the adverse consequences and protective factors of workplace violence.

Workplace violence poses a serious occupational hazard for nurses, which not only causes stress and hassle for attacked nurses, but also reduces the performance and productivity of victimised nurses. Pearson analysis reported an inverse relationship between workplace violence and work engagement among nurses, which indicated that nurses who were exposed to workplace violence reduced their work engagement. The negative correlation between workplace violence and work engagement in this study was consistent with previous studies which provided support among nurses from various backgrounds across diverse nationalities. For instance,

Table 4 The multiple linear regression analysis for work engagement

	Unstandardised coefficients		Standardised coefficients		
	B	SE	Beta	t	P value
Step 1					
Constant	33.781	3.438		9.825	<0.001
Gender	−1.957	1.250	−0.039	−1.565	0.118
Ethnicity	−1.016	1.377	−0.018	−0.738	0.461
Age	0.276	0.104	0.206	2.653	0.008
Professional title	−3.342	0.458	−0.240	−7.290	<0.001
Occupational department	0.483	0.214	0.056	2.258	0.024
Step 2					
Constant	36.475	3.028		12.046	<0.001
Gender	−2.319	1.100	−0.046	−2.107	0.035
Ethnicity	2.034	1.220	0.037	1.667	0.096
Age	0.028	0.092	0.021	0.300	0.764
Professional title	−0.063	0.432	−0.005	−0.145	0.885
Occupational department	−0.141	0.190	−0.017	−0.743	0.458
Workplace violence	−1.667	0.078	−0.511	−21.373	<0.001
Step 3					
Constant	6.427	2.513		2.557	0.011
Gender	−2.050	0.850	−0.041	−2.413	0.016
Ethnicity	1.565	0.942	0.028	1.661	0.097
Age	0.051	0.071	0.038	0.708	0.479
Professional title	0.011	0.333	0.001	0.032	0.975
Occupational department	−0.115	0.147	−0.013	−0.780	0.436
Workplace violence	−0.571	0.069	−0.175	−8.278	<0.001
Psychological resilience	0.392	0.012	0.642	32.560	<0.001

a cross-sectional survey of 243 nurses from emergency departments investigated the impacts of psychological violence on work engagement in China, partial correlation analysis revealed an inverse relationship between workplace psychological violence and work engagement among emergency nurses.[34] Likewise, a cross-sectional study of 198 nurses from surgical wards explored the impacts of workplace violence on work engagement in Sweden and found that exposure to workplace violence reduced work engagement among surgical nurses.[35] The medical institutions and health systems should implement prevention strategies and intervention measures aimed at preventing workplace violence and maintaining work engagement, thereby addressing work pressures and bolstering work productivity. Furthermore, medical institutions and health systems should prioritise support and assistance to affected nurses, like offering counselling services and implementing training programmes, helping them alleviate psychological trauma and maintain work performance. Evidence from both this study and others converged to support the negative impacts of workplace violence on work engagement among nurses, highlighting the importance of identifying protective factors to mitigate the detrimental effects of workplace violence.

Table 5 The mediation analysis of psychological resilience

		R	R2	F	β	T
Work engagement	Workplace violence	0.51	0.26	538.12	−1.65	−23.20*
Psychological resilience	Workplace violence	0.52	0.27	590.64	−2.80	−24.30*
Work engagement	Workplace violence	0.75	0.56	981.56	−0.55	−8.56*
	Psychological resilience				0.39	32.58*

*P<0.01.

Table 6 The effect of mediation analysis of psychological resilience

		95% CI				
	Effect	Lower bound	Upper bound	SE	Z /t	P
Total effect	−1.65	−1.79	−1.51	0.06	−23.20	0.001
Direct effect	−0.55	−0.68	−0.43	0.06	−8.56	0.001
Indirect effect	−1.10	−1.21	−0.99	0.06		

Psychological resilience represents a psychological capital and personality trait that enables nurses to cope with and adapt to challenges or adversities.[36] Nurses with psychological resilience are inclined to perceive challenges or adversities as potential avenues for growth and development, making them more likely to address intricate difficulties and achieve positive adaptation. This study indicated that psychological resilience mediated the negative relationship between workplace violence and work engagement, implicating that psychological resilience mitigated the adverse impacts of workplace violence on work engagement. This finding was consistent with the conclusion of previous studies that suggested a mediating effect of psychological resilience on the relationship between workplace violence and nurses' outcomes. For instance, a cross-sectional study involving 118 mental health nurses in Israel found that psychological resilience acted as a protective factor which mediated the impacts of workplace violence on life satisfaction among nurses.[18] Furthermore, a cross-sectional study involving 349 nurses in China found that psychological resilience served as a mediator which buffered the effects of workplace violence on mental health.[37] In addition to consistent findings from most studies, inconsistent findings also existed in some studies which failed to support the mediating role of psychological resilience. A cross-sectional study from America failed to support the mediating role of psychological resilience on the relationship between workplace violence and mental health among nurses.[38] The mediation effect of psychological resilience on the relationship between workplace violence and work engagement implicated resilience as a target for controlling workplace violence and improving work engagement level. Training programmes and consulting projects should be implemented to equip nurses with stress management skills, positive psychology techniques, and mindfulness meditation practices, thereby enhancing their resilience in the face of workplace violence. Meanwhile, mentorship systems and colleague support networks should be established to enable nurses to share experiences, seek advices and obtain encouragements, thereby further improving their resilience in the face of workplace challenges.

Limitation

The self-reported measure of this survey could introduce a risk of recall/report bias due to inaccurate responses.[39] Further studies should combine multiple sources of information or/and multiple techniques of data collection to overcome the subjective bias inherent in self-reports.[40] The cross-sectional design of this study could preclude a causal inference of these variables. Further studies with experimental and longitudinal designs should be performed to explore more complex interactions among these variables. The present study used a convenience sampling method to recruit participants from public Chinese medicine hospitals, which limited the representativeness of the study sample and the generalisability of the study results. Future studies should use random sampling approaches to recruit participants from various hospitals across diverse geographical regions. The present study recruited a predominantly female sample, reflecting the gender composition of the nursing profession and societal norms of caregiving roles. While the gender distribution in the current sample was representative of the nursing workforce in the study context, which limited the generalisability of the study findings to male nurses. Future research should aim to recruit a more balanced sample of nurses, or ensure adequate representation of male nurses to facilitate subgroup analyses.

CONCLUSION

Workplace violence refers to incidents that threaten the safety and health of staff through abuse, threats or assault in the work environment. Workplace violence represents one of the most complex occupational hazards in the healthcare system worldwide, and nurses constitute one of the professional groups most exposed to such violence. Workplace violence is a serious and destructive phenomenon that not only impairs the personal lives and professional work of victimised nurses but also decreases the work engagement and job performance of assaulted nurses. The present study investigated the status of workplace violence, psychological resilience and work engagement, as well as explored the relationships between these factors among Chinese nurses. This cross-sectional investigation recruited a convenience sample of 1571 clinical registered nurses, who face a higher risk of exposure to different types of workplace violence. The results showed that nurses exposed to workplace violence decreased work engagement, while psychological resilience acted as a protective factor to buffer the negative impacts of workplace violence on work engagement. These findings provide a theoretical basis for intervention formulation which equips nurses with resilience to resist the adverse effects of workplace violence.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Consent obtained directly from patient(s).

Ethics approval This study involves human participants and was approved by This study obtained ethic approval from the Ethics Committee of The First Hospital of Hunan University of Chinese Medicine (Reference number: HN-LL-ZFKY-2023-001-01). Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

1 World Health Organization. Violence and injury prevention. Available: https://www.who.int/violence_injuryprevention/violence/activities/workplace/background/en
2 Lei Z, Yan S, Jiang H, *et al*. Prevalence and Risk Factors of Workplace Violence Against Emergency Department Nurses in China. *Int J Public Health* 2022;67:1604912.
3 Liu J, Gan Y, Jiang H, *et al*. Prevalence of workplace violence against healthcare workers: a systematic review and meta-analysis. *Occup Environ Med* 2019;76:927–37.
4 Lu L, Dong M, Wang S-B, *et al*. Prevalence of Workplace Violence Against Health-Care Professionals in China: A Comprehensive Meta-Analysis of Observational Surveys. *Trauma Violence Abuse* 2020;21:498–509.
5 Cai Y, Li Q, Cao T, *et al*. Nurses' work engagement: The influences of ambidextrous leadership, clinical nurse leadership and workload. *J Adv Nurs* 2023;79:1152–61.
6 Liu X, Yang H, Hu Y, *et al*. Incidence of workplace violence against nurses among Chinese hospitals: A meta-analysis. *J Nurs Manag* 2022;30:1490–501.
7 World Medical Association. 73rd world health assembly, agenda item 3: covid-19 pandemic response. 2020. Available: https://www.wma.net/wp-content/uploads/2020/05/WHA73-WMA-statement-on-Covid-19-pandemic-response-.pdf
8 Duan X, Ni X, Shi L, *et al*. The impact of workplace violence on job satisfaction, job burnout, and turnover intention: the mediating role of social support. *Health Qual Life Outcomes* 2019;17:93.
9 Pariona-Cabrera P, Cavanagh J, Bartram T. Workplace violence against nurses in health care and the role of human resource management: A systematic review of the literature. *J Adv Nurs* 2020;76:1581–93.
10 Hetzel-Riggin MD, Swords BA, Tuang HL, *et al*. Work Engagement and Resiliency Impact the Relationship Between Nursing Stress and Burnout. *Psychol Rep* 2020;123:1835–53.
11 Rasool SF, Wang M, Zhang Y, *et al*. Sustainable Work Performance: The Roles of Workplace Violence and Occupational Stress. *Int J Environ Res Public Health* 2020;17:912.
12 Schaufeli WB, Salanova M, González-romá V, *et al*. The measurement of engagement and burnout: a two-sample confirmatory factor analytic approach. *J Happiness Stud* 2002;3:71–92.
13 Holm K, Jönsson S, Muhonen T. How are witnessed workplace bullying and bystander roles related to perceived care quality, work engagement, and turnover intentions in the healthcare sector? A longitudinal study. *Int J Nurs Stud* 2023;138:104429.
14 Liu J, Zheng J, Liu K, *et al*. Workplace violence against nurses, job satisfaction, burnout, and patient safety in Chinese hospitals. *Nurs Outlook* 2019;67:558–66.
15 Wu Y, Wang J, Liu J, *et al*. The impact of work environment on workplace violence, burnout and work attitudes for hospital nurses: A structural equation modelling analysis. *J Nurs Manag* 2020;28:495–503.
16 Foster K, Roche M, Delgado C, *et al*. Resilience and mental health nursing: An integrative review of international literature. *Int J Ment Health Nurs* 2019;28:71–85.
17 Huang H, Su Y, Liao L, *et al*. Perceived organizational support, self-efficacy and cognitive reappraisal on resilience in emergency nurses who sustained workplace violence: A mediation analysis. *J Adv Nurs* 2024;80:2379–91.
18 Itzhaki M, Peles-Bortz A, Kostistky H, *et al*. Exposure of mental health nurses to violence associated with job stress, life satisfaction, staff resilience, and post-traumatic growth. *Int J Ment Health Nurs* 2015;24:403–12.
19 Shi L, Zhang D, Zhou C, *et al*. A cross-sectional study on the prevalence and associated risk factors for workplace violence against Chinese nurses. *BMJ Open* 2017;7:e013105.
20 Schat ACH, Kelloway EK. Reducing the adverse consequences of workplace aggression and violence: the buffering effects of organizational support. *J Occup Health Psychol* 2003;8:110–22.
21 Wang P, Wang M, Bai Q, *et al*. Path analysis on workplace violence affecting work ability, job satisfaction, and turnover intent in health professionals in Shangqiu City. *J Hyg Res* 2006;35:785–8.
22 Chang T, Jiang X, Wei J, *et al*. Mediating effects of psychological capital on the relationship between workplace violence and professional identity among nurses working in Chinese public psychiatric hospitals: a cross-sectional study. *BMJ Open* 2023;13:e065037.
23 Connor KM, Davidson JRT. Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). *Depress Anx* 2003;18:76–82.
24 Guo Y-F, Cross W, Plummer V, *et al*. Exploring resilience in Chinese nurses: a cross-sectional study. *J Nurs Manag* 2017;25:223–30.
25 Yu X, Zhang J. Factor analysis and psychometric evaluation of the Connor-Davidson Resilience Scale (CD-RISC) with Chinese people. *soc behav pers* 2007;35:19–30.
26 Li C, Shi H, Zhang Y, *et al*. Association between perceived overqualification, work engagement, job satisfaction among nurses: a cross-sectional study. *BMJ Open* 2024;14:e081672.
27 Zhang YW, Gan YQ. Reliability and validity of the Chinese version of the Utrecht Work Engagement Scale (UWES). *Chin J Clin Psychol* 2005;4–13.
28 Tang P, Zhang X, Feng F, *et al*. The relationship between organizational commitment and work engagement among clinical nurses in China: A cross-sectional study. *J Nurs Manag* 2022;30:4354–63.
29 Hayes AF. PROCESS: a versatile computational tool for observed variable mediation, moderation, and conditional process modeling. Lawrence, KS: University of Kansas, 2012.
30 Hayes AF. An Index and Test of Linear Moderated Mediation. *Mult Behav Res* 2015;50:1–22.
31 Muller D, Judd CM, Yzerbyt VY. When moderation is mediated and mediation is moderated. *J Pers Soc Psychol* 2005;89:852–63.
32 Zhang L, Wang A, Xie X, *et al*. Workplace violence against nurses: A cross-sectional study. *Int J Nurs Stud* 2017;72:8–14.
33 Cheung T, Yip PSF. Workplace violence towards nurses in Hong Kong: prevalence and correlates. *BMC Public Health* 2017;17:196.

34 Hu H, Gong H, Ma D, *et al*. Association between workplace psychological violence and work engagement among emergency nurses: The mediating effect of organizational climate. *PLoS ONE* 2022;17:e0268939.
35 Jakobsson J, Örmon K, Axelsson M, *et al*. Exploring workplace violence on surgical wards in Sweden: a cross-sectional study. *BMC Nurs* 2023;22:106.
36 Han C-Y, Chen L-C, Lin C-C, *et al*. How Emergency Nurses Develop Resilience in the Context of Workplace Violence: A Grounded Theory Study. *J Nurs Scholarsh* 2021;53:533–41.
37 Fan S, An W, Zeng L, *et al*. Rethinking "zero tolerance": A moderated mediation model of mental resilience and coping strategies in workplace violence and nurses' mental health. *J Nurs Scholarsh* 2022;54:501–12.
38 Sauer PA, McCoy TP. Nurse Bullying: Impact on Nurses' Health. *West J Nurs Res* 2017;39:1533–46.
39 Podsakoff PM, MacKenzie SB, Podsakoff NP. Sources of method bias in social science research and recommendations on how to control it. *Annu Rev Psychol* 2012;63:539–69.
40 Pietersen C. Interpersonal bullying behaviours in the workplace. *SA J Ind Psychol* 2007;33:59–66.