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Emotional labor, fatigue, and presenteeism in Chinese nurses: the role of organizational identification

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Abstract

Background Presenteeism has become a significant issue related to health. However, the effect of fatigue and organizational identification on the relationship between emotional labor and presenteeism among Chinese nurses remains unclear. This study aims to explore the correlation of Chinese nurses' emotional labor, fatigue and organizational identification with presenteeism, and to analyze the mediating effect of fatigue and the moderating effect of organizational identification on the relationship between emotional labor and presenteeism.

Methods A cross-sectional study was performed from June to October 2022 in Changchun City, Jilin Province, China. In total, 1,630 nurses were asked to complete a range of self-administered questionnaires, including the Emotional Labor Scale, the Fatigue Scale, the Organizational Identification Scale and the Stanford Presenteeism Scale. Besides, the PROCESS macro and multiple linear regression were used for moderated mediation analysis.

Results Emotional labor ($r=0.108$, $P<0.001$) and fatigue ($r=0.475$, $P<0.001$) were positively correlated with presenteeism, while organizational identification ($r=-0.261$, $P<0.001$) was negatively correlated with presenteeism. The effect of emotional labor on presenteeism was partially mediated by fatigue (Effect = 0.014, 95% CI = [0.007, 0.021]). Additionally, the relationship between emotional labor and fatigue was moderated by organizational identification ($P=0.018$ for the interaction term).

Conclusions Fatigue and organizational identification have mediating and moderating effects on the relationship between emotional labor and presenteeism, respectively. Targeted support measures should be taken to improve the presenteeism of nurses. Nursing managers can relieve the psychological pressure and fatigue of nurses by establishing emotional release channels, and improve the presenteeism of nurses through enhancing organizational identification.

Keywords Emotional labor, Fatigue, Organizational identification, Presenteeism, Chinese nurses

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Background

Nurses account for about 59% of health professionals and are considered the largest occupational group in the health sector [1]. The hospital represents an important place for health promotion and health care, and nurses play an indispensable role in improving national health, disease prevention, treatment and rehabilitation. By the end of 2022, the number of registered nurses in China was roughly 3.7 per 1,000 persons [2], just reaching the global level of 3.69 per 1,000 persons in 2018 [3]. Due to the nature of care required by patients, nurses working in hospitals often experience stress caused by heavy workloads, long working hours, night shifts, and poor job replacement in China [4, 5]. Therefore, nurses' physical and mental health is facing severe challenges and has become one of the occupations with a high incidence of presenteeism.

Presenteeism refers to the practice of being present at the workplace but not being able to perform all tasks due to health issues, which can cause damage to organizational productivity or performance [6]. Nurses, as professionals, provide emotional and medical services, including listening to complaints and face-to-face communication with patients, which has an inevitable association with emotional labor. With the intensification of competition among medical institutions, various institutions attempt to create a friendly atmosphere by executing uniform emotional expression standards and educating nurses to be kind. Emotional labor may exert a positive impact on nurse-patient relationships. However, it can also be harmful when a gap exists between the emotions that the nurses experience and the emotions that they need to demonstrate. Such emotional labor may lead to emotional dissonance, which causes exhaustion, poor job performance and even depressive symptoms [7, 8]. This may become a risk factor of presenteeism, which further compromises patient safety and increases economic costs. Since nursing managers have not paid enough attention to the relationship between emotional labor and presenteeism and its far-reaching adverse consequences for individuals, patients and organizations, much less is known about both the effect of emotional labor on presenteeism and its potential relationship in Chinese healthcare settings.

Presenteeism has been a common phenomenon in the workplace, and numerous studies have shown that it is particularly prevalent in healthcare workers [9, 10]. A recent meta-analysis indicated that the overall pooled estimate of nurses' presenteeism prevalence was 49.2% [11]. Due to the lack of resources, shift work, inadequate staffing and management support, bad work environment, and poor relationships with colleagues, Chinese nurses often experience moderate or higher levels of stress [4]. All these stressors may result in multiple adverse outcomes among nurses, including presenteeism. The long-term existence of presenteeism further damages the physical and mental health of individuals due to making them have insufficient recovery time, which reduces the intention to stay [5] and also causes an increase of economic costs [12]. In addition, presenteeism reduces the work quality of nurses and compromises the safety of patients [13]. Therefore, the health productivity of nurses should be improved through presenteeism management. In addition to individual factors, presenteeism is also influenced by working conditions to a sizable extent.

Emotional labor is the third kind of labor after physical and mental labor, and the nursing profession is a typical emotional labor-intensive job. The concept of emotional labor was first proposed in the 1980s, referring to the physical display, emotional expression management, planning, and individual efforts to respond to organizational demands in the workplace [14]. Grandey et al. proposed two main emotional labor strategies, including surface acting and deep acting. To be specific, surface acting is the regulation of expression and behavior as far as possible to match the emotion required by the organization, but the inner feelings do not change. Deep acting means that individuals adjust their inner emotional feelings to conform to the external emotional performance of the organization, and show them through behavior [14]. A large sample survey in 92 Chinese mainland hospitals revealed that Chinese nurses had moderate to high emotional labor experiences [15]. As a nurse who has more contact with patients, it is especially essential to manage his/her emotions to fulfill job requirements. Emotional labor can be either good or bad for job performance, depending on how it is performed. According to the emotional labor theory, emotional labor exerts an impact on individual and organizational levels [16]. Appropriate emotional labor can improve the effective communication ability of nurses and better conduct clinical nursing work. In contrast, inappropriate emotional labor causes physical and mental health problems, withdrawal behavior, and affects work performance. A prior study conducted in South Korea showed how nurses link emotional labor to presenteeism [17]. Nevertheless, there are few studies on how emotional labor affects presenteeism through an individual's health status and his/her relationship with the organization in the context of Chinese healthcare.

Nurses are often in a state of highly demanding work, and the cerebral cortex is easily turned from excitation to inhibition, leading to fatigue, which is manifested by physical or mental exhaustion after a long period of exertion without adequate rest and recovery [18]. Chinese nurses need not only professional competence and knowledge in the work but also face-to-face contact with patients and their families, during which nurses may

face various events and should adopt different emotional labor strategies. When nurses have to make external emotional representations inconsistent with their actual emotional experience, their self-authenticity will be damaged and will be prone to psychological distress and fatigue [19]. The association between emotional labor, fatigue, and presenteeism can be understood by using the Job Demand-Resource Model. Job demands correspond to "health damage processes", which require continuous physical and/or mental (cognitive and emotional) efforts with specific physical or psychological costs [20]. Emotional display required by the organization serves as an important job demand. When an imbalance exists between costs (emotional labor paid) and expected benefits in the workplace, individuals will be prone to burnout and fatigue, which leads to a decrease in work enthusiasm and work efficiency, as well as obvious presenteeism. Moreover, it is found that presenteeism can increase with fatigue and muscle pain among female workers in the health and social work sector [21]. Based on the existing research, it is hypothesized that fatigue can mediate the relationship between emotional labor and presenteeism.

Organizational identification is one kind of social identification, which refers to the degree of identification, emotional dependence and participation of organization members, and the sense of belonging that they are members of the organization [22]. It provides a psychological foundation for organizations and employees to form a community of destiny. Individuals with a high level of organizational identification are more likely to adopt the organization's mission, values and function, with the motivation to achieve organizational goals [23]. According to the Conservation of Resources theory, individuals always strive to acquire, maintain and preserve the resources valuable to avoid the loss of resources [24]. When individuals show emotional labor strategies, they will consume psychological resources and simultaneously supplement them through external interaction. Organizational identification is an important source of external energy supply. When individuals perceive a positive organizational environment, they may internalize and display the desired organizational emotions during customer interactions [25]. Organizational identification plays a moderating role in the relationship between emotional labor and job satisfaction through mindfulness among university teachers [26]. However, Li et al. [27] believed that organizational identification exerted a potential negative impact on outcomes related to individuals and organizations. The direction of the influence of organizational identification on organizations and organizational members is controversial. Then, in the Chinese healthcare settings, can organizational identification provide nurses with more psychological resources to handle the physical and mental fatigue caused by emotional labor? Therefore, it is hypothesized that organizational identification can moderate the relationship between emotional labor and fatigue.

This study aims to explore the correlation of emotional labor, fatigue, and organizational identification with presenteeism, and to investigate the mediating effect of fatigue and the moderating effect of organizational identification on the relationship between emotional labor and presenteeism among nurses in Chinese healthcare settings. Figure 1 shows the conceptual framework of

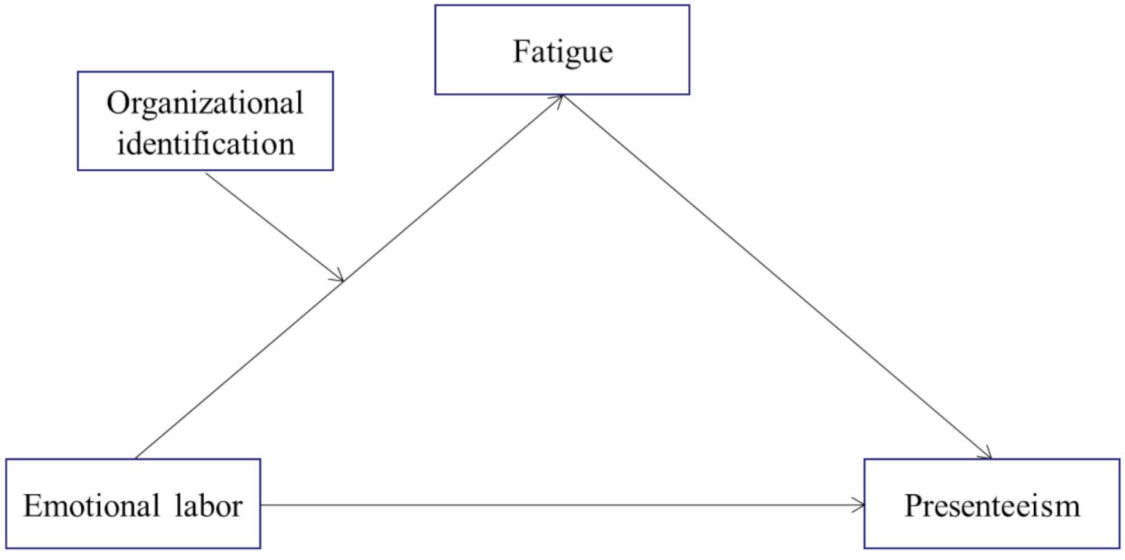

Fig. 1 The conceptual framework of the moderated mediation model

the moderated mediation model. This study fills in the deficiency of the existing literature, further enriches the empirical research on presenteeism, and assists hospital administrators and nursing managers in adopting effective interventions in the presenteeism of nurses in China.

Methods

Study design and participants

A cross-sectional study design by convenience sampling was conducted with nurses in the medical consortium of the First Hospital of Jilin University in China. The inclusion criteria were registered nurses who had worked for one year or more and were at their posts during the investigation and voluntarily participated in the survey. Participants with logical errors in the questionnaire or too short time to complete the questionnaire were excluded. This study recruited 1,713 participants in total, and 1,630 questionnaires were accepted after excluding those with invalid answers, accounting for an effective response rate of 95.15%.

According to Kendall's principle of sample size calculation, the sample size of a survey should generally be at least 5–10 times the number of independent variables [28]. In this study, a total of 15 explanatory variables (including 4 sociodemographic characteristics, 3 occupational characteristics, 5 lifestyle characteristics, emotional labor, fatigue, and organizational identification) were included. Therefore, the estimated sample size should fall in the range of 75–150 participants. Given a 20% rate of invalid questionnaires, a final sample size of 180 participants was needed. Therefore, the sample size of this study was sufficient.

Data collection and management

Data were collected from June to October 2022. Before the investigation, important details, including time and the number of participants, were determined through communication with hospital leaders and head nurses. Samples were collected online using a self-administered questionnaire. Firstly, an electronic version of the questionnaire was made through Wenjuanxing (similar to SurveyMonkey) to generate a link to the questionnaire. Secondly, the online questionnaire was given to nurses via a social network mobile app (WeChat or QQ groups). All nurses could click on the link and receive a separate questionnaire that stated both the purpose of this study and the principles of voluntary participation. This study ensured the anonymity of the collected data, and the investigators signed a confidentiality agreement to protect the rights and interests of the participants. A standard that all questions must be answered should be established before the questionnaires are successfully submitted to ensure data integrity. The system will prompt that the submission is unsuccessful if there are missing answers. The collected questionnaires were managed by a team member.

Measure

Emotional labor

The 14-item Emotional Labor Scale (ELS) developed by Grandey [29] and adapted to Chinese by Luo et al. [30] was employed to assess the nurses' level of emotional labor. This scale involves three emotional labor strategies: surface acting (7 items), deep acting (3 items) and emotional expression requirements (4 items). Each item was evaluated via a 6-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). A higher score indicated a higher frequency of respondents using this strategy. The total ELS score was the sum of all 14 items, with a higher score indicating a higher level of emotional labor. The Chinese version of ELS has been widely adopted in China [31], and Cronbach's alpha values of ELS and its three dimensions in the current study were 0.860, 0.869, 0.891 and 0.754, respectively.

Fatigue

Fatigue of nurses was determined by the 14-item Fatigue Scale-14 (FS-14) developed by Chalder et al. [32], which has been widely applied to medical workers, such as physicians, nurses and anesthesiologists in China [33–35]. The scale reflects the severity of fatigue from different angles: physical fatigue by items 1–8 and mental fatigue by items 9–14. Items 10, 13, and 14 were graded reversely. The score for each item is measured by a score for fatigue-related problems, which has two answers: 0 (without fatigue-related problems) and 1 (with fatigue-related problems). The total fatigue score was calculated ranging from 0 to 14. Based on its evaluation criterion, when the total score is 7 or more, it can be determined that it is a fatigue state [35]. In this study, the Cronbach's alpha coefficient of FS-14 was 0.700.

Organizational identification

The organizational identification of nurses was evaluated using the Chinese version of the 6-item Organizational Identification Scale, which was proposed by Ashforth and Mael [22] and revised by Li et al. [36]. For example, "When someone criticizes (name of the hospital), it feels like a personal insult". For each question, the response options ranged from 1 (totally disagree) to 5 (totally agree), with a higher score indicating a higher level of organizational identification. In the current study, the Cronbach's alpha coefficient of this scale was 0.860.

Presenteeism

Presenteeism was classified as a dependent variable and evaluated using the Stanford Presenteeism Scale (SPS-6) [37]. This scale includes six items and allows respondents

to self-report the impact of health problems they encountered in the last month on work productivity when they worked ill. In this study, the translation version by Chinese scholars [38] was adopted and assessed through a 5-point Likert scale, ranging from 1 (totally disagree) to 5 (totally agree). Items 5 and 6 were counted in reverse. The total score ranged from 6 to 30, with a higher score indicating a greater impact of health problems on work, namely, a greater loss of health-related productivity caused by presenteeism. In this study, a total of 1,630 samples were chosen to measure the reliability of SPS-6, and the Cronbach's alpha coefficient of SPS-6 was 0.721.

Covariates assessment

To minimize the impact of other factors on the associations of emotional labor, fatigue, and organizational identification with presenteeism, relevant confounders were adjusted with reference to previous studies [39, 40]. Covariates included sociodemographic characteristics (gender, age (year), marital status, and educational level), occupational characteristics (department, years of work, and average personal monthly income (renminbi, RMB)), and lifestyle characteristics (smoking, alcohol consumption, physical exercise, self-rated sleep quality, and self-rated health). RMB 1 was about 0.146 USD based on the conversion rate at the time of data collection. The nurses were considered as drinkers/smokers if currently drinking/smoking regardless of quantity and frequency. Nurses were asked about the frequency of current physical exercise (such as brisk walking, cycling, aerobic dance, and climbing stairs), and their answers were classified as never, sometimes, and often. Self-rated sleep quality and self-rated health were assessed by the questions as follows: How do you feel about your sleep quality at present? What do you think of your health status? The response options included very good, good, fair, poor, and very poor. The data on these two variables were divided into three categories, which were good, fair, and poor.

Data analysis

Statistical analysis was performed via the SPSS version 24.0 (IBM Corp, Armonk, NY, USA). The normality assumption of the data was checked by examining kurtosis and skewness values. Categorical variables were described by using numbers (proportions), while continuous variables were described by means and standard deviations (SD). A one-sample t-test and one-way analysis of variance (ANOVA) were used to compare differences in presenteeism scores between subgroups (including alcohol consumption and physical exercise). Before testing the hypotheses, Pearson's correlations analysis was employed to explore the relationship between emotional labor, fatigue, organizational identification, and presenteeism. Furthermore, multiple linear regression analysis and macro program PROCESS for SPSS [41, 42] were utilized to test the mediating role of fatigue and the moderating role of organizational identification in the relationship between nurses' emotional labor and presenteeism. PROCESS macro, a freely available, is a widely used computational tool for mediation and moderation analysis. The SPSS macro facilitates the conduction of the recommended asymptotic and bootstrapping method [43]. Through the pathway analysis and two separate ordinary least squares regression analyses, PROCESS generates estimates of all the parameters in the model and produces a bootstrap CI for each index of partial moderated mediation. A 95% confidence interval (CI) was calculated with 5,000 bootstrapped samples. If the 95% CI does not contain zero, then it indicates statistical significance.

Ethics approval and consent to participate

This study received approval from the Research Ethical Committee of Jilin University School of Public Health (No. 2022-05-18). All nurses were provided signed informed consent following the Declaration of Helsinki.

Results

Sample characteristics and presenteeism

Table 1 shows the sociodemographic, occupational and lifestyle characteristics of participating nurses and the distribution of presenteeism in categorical items. Among the 1,630 participants, 95.8% were female with an average age of 33.34 (SD = 7.26). The number of married nurses (72.6%) was greater than unmarried ones (27.4%), and 70.2% of nurses obtained a bachelor's degree or above. There were differences in the mean score of presenteeism for the department and years of work ($P<0.05$). About half of the nurses (49.3%) reported an average personal monthly income equal to or less than 4,000 RMB. Of all the participants, 2.7% and 5.7% reported smoking and drinking alcohol, respectively. Drinkers had higher presenteeism scores than non-drinkers ($P=0.044$). In addition, 41.4% of nurses reported never doing physical exercise, and they had higher presenteeism scores than their counterparts ($P<0.001$). In terms of self-rated sleep quality and self-rated health, 32.8% and 22.2% of nurses rated both their sleep quality and health status as poor, respectively. Moreover, there were significant differences in the mean scores of presenteeism among nurses with different self-rated sleep quality ($P<0.001$) and self-rated health ($P<0.001$). More detailed information is shown in Table 1.

Correlations of the study variables

Kim [44] identified that if |skewness| > 2 or |kurtosis| > 7, then the data did not form a normal distribution. In

Table 1 Characteristics of participants and the distribution of presenteeism in categorical items ($N = 1,630$)

Variables		Sample *N*(%)	Presenteeism Mean ± SD
Gender			
	Male	69(4.2)	14.26 ± 4.72
	Female	1561(95.8)	14.63 ± 4.20
Age (year)			
	≤ 30	570(35.0)	14.64 ± 4.10
	31 ~ 40	856(52.5)	14.66 ± 4.24
	≥ 41	204(12.5)	14.35 ± 4.52
Marital status			
	Married	1183(72.6)	14.64 ± 4.22
	Unmarried	447(27.4)	14.55 ± 4.24
Educational level			
	Junior college or below	486(29.8)	14.44 ± 4.03
	Bachelor's or above	1144(70.2)	14.69 ± 4.31
Department***			
	Internal medicine	439(26.9)	15.15 ± 4.29
	Surgery	553(33.9)	14.19 ± 4.16
	Gynaecology	92(5.7)	14.32 ± 4.20
	Paediatrics	132(8.1)	14.74 ± 4.23
	Emergency	54(3.3)	15.81 ± 4.30
	Intensive care unit	64(3.9)	15.88 ± 4.90
	Operating room	50(3.1)	13.02 ± 4.12
	Others	246(15.1)	14.41 ± 3.85
Years of work*			
	≤ 5	376(23.1)	14.38 ± 4.04
	6 ~ 10	625(38.3)	14.98 ± 4.29
	≥ 11	629(38.6)	14.40 ± 4.25
Average personal monthly income (RMB)			
	≤ 5000	804(49.3)	14.77 ± 4.16
	5001 ~ 10,000	568(34.9)	14.44 ± 4.18
	≥ 10,001	258(15.8)	14.54 ± 4.53
Smoking			
	No	1586(97.3)	14.60 ± 4.21
	Yes	44(2.7)	15.14 ± 4.94
Alcohol consumption*			
	No	1537(94.3)	14.56 ± 4.19
	Yes	93(5.7)	15.47 ± 4.73
Physical exercise***			
	Never	675(41.4)	15.15 ± 4.17
	Sometimes	713(43.7)	14.43 ± 4.15
	Often	242(14.9)	13.69 ± 4.41
Self-rated sleep quality***			
	Good	348(21.3)	12.77 ± 3.96
	Fair	748(45.9)	14.57 ± 3.88
	Poor	534(32.8)	15.88 ± 4.41
Self-rated health***			
	Good	395(24.2)	12.53 ± 3.98
	Fair	873(53.6)	14.60 ± 3.76
	Poor	362(22.2)	16.95 ± 4.35

Note: Values are expressed as numbers (proportions) for categorical data and Mean ± SD for continuous data. The *P*-value was calculated by the *t*-tests for gender, marital status, educational level, smoking and alcohol consumption, and analysis of variance (ANOVA) for other variables

*$P < 0.05$, ***$P < 0.001$.

Table 2 Correlations in emotional labor, fatigue, organizational identification and presenteeism

Variables	Mean	SD	1	2	3	4
1. Emotional labor	50.98	11.04	1			
2. Fatigue	7.78	3.74	0.129***	1		
3. Organizational identification	22.39	5.05	0.158***	-0.227***	1	
4. Presenteeism	14.62	4.23	0.108***	0.475***	-0.261***	1

Note: ***$P<0.001$

Table 3 Testing the mediation effect of fatigue on the association between emotional labor and presenteeism

Variable	B	SE	β	t	R^2	95% CI of B	F
Step 1. Emotional labor predicts presenteeism							
Independent variable: emotional labor	0.033	0.009	0.086	3.708***	0.137	(0.016, 0.050)	20.847***
Dependent variable: presenteeism							
Step 2. Emotional labor predicts fatigue							
Independent variable: emotional labor	0.030	0.007	0.088	4.333***	0.334	(0.016, 0.043)	63.815***
Dependent variable: fatigue							
Step 3. Fatigue predicts presenteeism							
Independent variable: emotional labor	0.019	0.008	0.050	2.292*	0.248	(0.003, 0.036)	39.273***
Mediator: fatigue	0.462	0.030	0.409	15.457***		(0.403, 0.521)	
Dependent variable: presenteeism							

Note. The results were adjusted for gender, age (year), marital status, educational level, department, years of work, average personal monthly income (RMB), smoking, alcohol consumption, physical exercise, self-rated sleep quality, and self-rated health. 95% CI, 95% confidence interval

*$P<0.05$, ***$P<0.001$.

this study, the absolute values of skewness and kurtosis of four key variables, namely emotional labor, fatigue, organizational identification and presenteeism, were less than 2 and 7, respectively, which indicates that the data followed a normal distribution pattern (data were not shown). Table 2 shows the means, standard deviations, and bivariate correlations of variables. The mean scores of emotional labor, fatigue, organizational identification, and presenteeism were 50.98 ($SD=11.04$), 7.78 ($SD=3.74$), 22.39 ($SD=5.05$), and 14.62 ($SD=4.23$), respectively. Emotional labor was significantly positively correlated with fatigue, organizational identification, and presenteeism (all $P<0.001$). Moreover, fatigue was negatively correlated with organizational identification, but positively correlated with presenteeism ($P<0.001$). Organizational identification was negatively correlated with presenteeism ($P<0.001$). Details are shown in Table 2.

Evaluation of mediation effect

The Variance Inflation Factor (VIF) was less than 5 and no collinearity existed among the variables, according to collinearity analysis (see Supplementary Table S1). The variable value of presenteeism is approximately fitted into the normal distribution. The mediating effect of fatigue on the relationship between nurses' emotional labor and presenteeism was examined using multiple linear regression analysis. Table 3 displays the test results adjusted for gender, age (year), marital status, educational level, department, years of work, average personal monthly income (RMB), smoking, alcohol consumption, physical exercise, self-rated sleep quality, and self-rated health. In this model, emotional labor was positively correlated with presenteeism ($B=0.033$, $\beta=0.086$, $P<0.001$) and fatigue ($B=0.030$, $\beta=0.088$, $P<0.001$). When controlling for emotional labor, fatigue emerged as the predictor of presenteeism ($B=0.462$, $\beta=0.409$, $P<0.001$). The explained percentage of variance in presenteeism increased from 13.7 to 24.8% after adding fatigue to the equation. The standard regression coefficient for the effect of emotional labor on presenteeism reduced from 0.086 to 0.050, while remaining significant ($P=0.022$).

The PROCESS macro (Model 4) of SPSS further demonstrated this mediation effect, which showed a reduction in the direct effect of emotional labor on presenteeism. The direct effect of emotional labor on presenteeism was 0.019, and there was a significant indirect effect of this association via the mediation of fatigue (Effect = 0.014, 95% CI = [0.007, 0.021]). Thus, fatigue had a partially mediating effect on the relationship between emotional labor and presenteeism.

Evaluation of moderated mediation effect

Multi-collinearity was minimized by centring the independent variable (emotional labor), the mediator (fatigue), and the moderator (organizational identification) on the mean. Table 4 shows the test results, which indicate that Model 1 was significant ($F=38.300$, $P<0.001$, $R^2=0.268$). The interaction term between emotional labor and organizational identification was not related to presenteeism ($P=0.479$), suggesting that the relationship between emotional labor and presenteeism was not moderated by organizational identification.

Table 4 Testing the moderated mediation effect of emotional labor on presenteeism

Variable		Model 1 (Presenteeism)		Model 2 (Fatigue)		Model 3 (Presenteeism)	
		B	*t*	*B*	*t*	*B*	*t*
Emotional labor	0.030	3.489***	0.041	5.881***	0.029	3.498***	
Organizational identification	-0.133	-6.885***	-0.106	-6.710***	-0.132	-6.937***	
Emotional labor × Organizational identification	-0.001	-0.707	0.002	2.368*			
Fatigue	0.427	14.244***			0.420	13.974***	
Fatigue × Organizational identification					0.009	1.893	
R^2	0.268		0.356		0.270		
F	38.300***		60.995***		38.566***		

Note. The results were adjusted for gender, age (year), marital status, educational level, department, years of work, average personal monthly income (RMB), smoking, alcohol consumption, physical exercise, self-rated sleep quality, and self-rated health

*$p<0.05$, ***$p<0.001$.

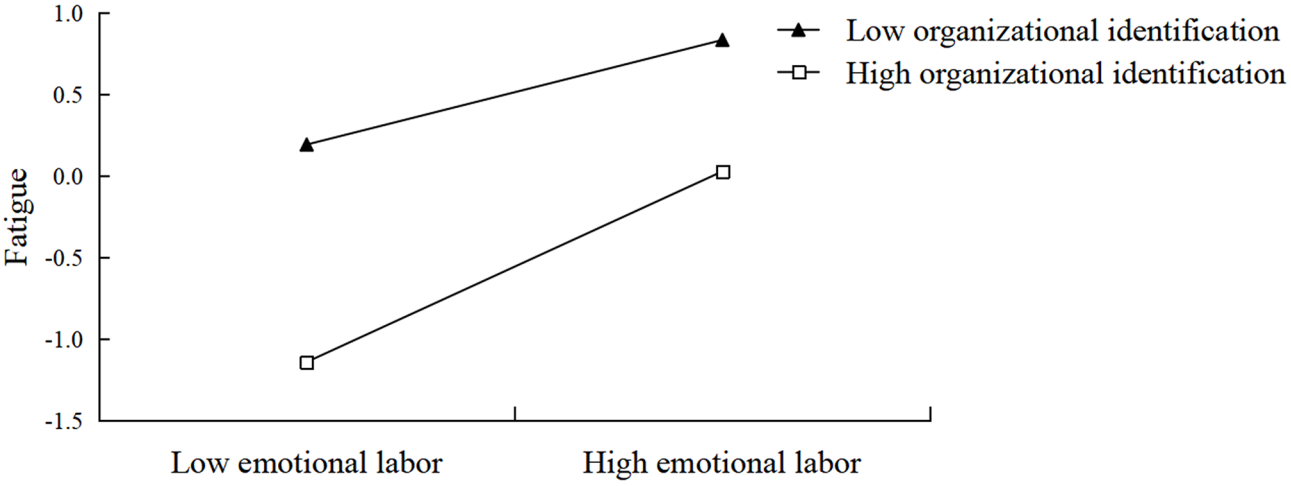

Fig. 2 Organizational identification moderates the effect of emotional labor on fatigue

Model 2 was significant ($F=60.995$, $P<0.001$, $R^2=0.356$). Fatigue was positively correlated with emotional labor and negatively correlated with organizational identification. The interaction term between emotional labor and organizational identification was positively related to fatigue ($P=0.018$), indicating that organizational identification had a moderating effect on the association between emotional labor and fatigue. Model 3 was also significant ($F=38.566$, $P<0.001$, $R^2=0.270$). The interaction term between fatigue and organizational identification was not related to presenteeism ($P=0.059$), suggesting that the relationship between fatigue and presenteeism was not moderated by organizational identification. Significant associations at 1 SD above and below the mean of organizational identification were tested via the simple slope analysis (see Fig. 2). There was a positive relationship between emotional labor and fatigue for nurses with high levels of organizational identification (B_{simple} = 0.053, $t=5.786$, $P<0.001$) and low levels of organizational identification (B_{simple} = 0.029, $t=3.623$, $P<0.001$). The effect of emotional labor on fatigue was higher in nurses with high levels of organizational identification than in those with low levels of organizational identification.

The bootstrap method via the PROCESS macro (Model 7) of SPSS was used to verify the moderated mediation effect. The effect of emotional labor on fatigue was analyzed at different levels of organizational identification. The results demonstrated that, for low levels of organizational identification, emotional labor had a significant effect on fatigue (SE=0.008, 95% CI = [0.013, 0.045]), and for high levels of organizational identification, the association between emotional labor and fatigue was also significant (SE=0.009, 95% CI = [0.035, 0.071]), which confirmed the above assumption.

Discussion

This cross-sectional study identified the associations of emotional labor, fatigue, and organizational identification with presenteeism among Chinese nurses and obtained three major findings. Firstly, emotional labor and fatigue were positively correlated with presenteeism, but organizational identification was negatively correlated with presenteeism. Secondly, fatigue had a mediating effect on the

association between emotional labor and presenteeism. Thirdly, organizational identification significantly moderated the first half pathway of the mediation model. The above findings not only extend the knowledge and understanding of the associations among emotional labor, fatigue, organizational identification and presenteeism but also provide a reference for developing effective interventions to ameliorate the presenteeism of Chinese nurses.

In this study, the total score of emotional labor was positively correlated with presenteeism, while its three dimensions were related to presenteeism in different directions. Specifically, emotional expression requirements and surface acting were positively correlated with presenteeism, but deep acting was the opposite (data were not shown). These results conformed to previous findings [45]. With the improvement of people's living standards and the increasing demand for medical services, patients pay more and more attention to their medical experience. Also, patient satisfaction has become a significant measure of the level of medical care, which requires nurses to have advanced ability in handling the relationship between nurses and patients. The emotional dissonance between real and expressive emotions consumes more psychological resources, weakens a personal sense of self-worth [46], and may cause alienation, cynicism and depression, which adversely affects work status and productivity. Instead, deep acting means that nurses adapt to the situation by adjusting their true feelings and controlling their emotions. This behavior of appropriately combining external emotional performance with internal feelings consumes relatively fewer physical and mental resources, which is not prone to presenteeism. In this study, fatigue is positively correlated with presenteeism. Chen et al. [47] found that fatigue is one of the symptoms that strongly affect work productivity. Nursing managers should regularly evaluate the fatigue of nurses, rationally allocate human resources, promote personnel matching, prevent fatigue mount guard, and avoid presenteeism.

This study demonstrated a negative correlation between organizational identification and presenteeism. To our knowledge, under the cultural background of China, there is currently only one previous study on presenteeism that considers organizational identification, among the rehabilitation therapists [48], and the result is consistent with the present research. A possible explanation for this finding may be that nurses with a high sense of organizational identification generally have the same values as the hospital, and therefore they show a positive attitude at work. Additionally, higher job engagement and job performance will reduce job burnout and then the occurrence of presenteeism. Moreover, organizational identification, to some extent, can adjust organizational conflicts, improve nurses' work cooperation and motivation, and thus reduce the level of presenteeism. Accordingly, nursing managers should take effective measures in the organization to enhance the organizational identification of nurses and to reduce presenteeism and the resulting loss of productivity.

It is predicted that fatigue may mediate the effect of emotional labor on presenteeism. Nurses who frequently performed emotional labor were more likely to experience fatigue, which increased presenteeism. Choi et al. [49] found that workers exposed to emotional labor had a significantly higher risk of fatigue, which was consistent with the existing evidence. In this study, the data were collected during the COVID-19 pandemic, when the healthcare system was under unprecedented pressure, and excessive job demands required nurses to perform emotional labor. The requirement of emotional expression is the specific emotion or behavior reflecting the nurse image that the hospital hopes to show. Based on the Conservation of Resources theory, Brotheridge and Lee [50] believed that performing emotional labor is a process of resource depletion. In response to the hospital's requirements for appropriate emotional expression, nurses adopt the strategy of surface or deep acting, which continuously consumes individual resources. If individuals' contributions and returns can maintain a basic balance, they will continue to work hard and show appropriate behavior in the way required by the organization. Otherwise, it is easy to induce unbalanced psychology. Undoubtedly, long-term emotional dissonance will increase the emotional resources of nurses, coupled with a heavy workload, enabling them to be prone to physical and mental fatigue. Nevertheless, nurses must continue working to meet higher job demands, which may disrupt the recovery process and aggravate chronic exhaustion and presenteeism [45].

There is also the effect of organizational identification on moderating the relationship between emotional labor and fatigue. The social identity theory holds that individual identity from group membership provides the significance and value attached to membership, which in turn affects personal emotion, cognition and behavior [51]. Employees with an increased perception of organizational identification believe that their efforts are valuable for the organization, feel more motivated to exhibit beneficial organizational behavior, and build a positive attitude towards it [52]. However, organizational identification is also a double-edged sword, which means that its influence is not always positive. This study showed that the effect of emotional labor on fatigue was higher in nurses with high levels of organizational identification than in those with low levels of organizational identification. In other words, the high level of organizational identification further enhanced the positive effect of nurses' emotional labor on fatigue. One explanation for this

finding could be that, under the influence of the idea of "benevolence" in traditional Chinese culture and people's expectations, nurses with a high level of organizational identification endorse the hospital's goals and values and often adopt deep-acting strategies. They are good at adjusting their emotions, showing the desired behavior of the organization and being competent in their posts. However, according to Grandey's emotion regulation theory [14], deep expression belongs to advanced regulation, which involves the transfer of attention and the change of cognition. It is a complicated process that includes positive thinking, imagination and memory of the situation, suppression of uncomfortable emotions, stimulation of suitable emotions, and coordination between one's own feelings and professional requirements. Due to the long-term deep acting of nurses, they should continuously perceive the emotions that the organization requires to express, which may gradually suppress and destroy their true feelings. This is not conducive to their emotional health, and it is easy to get fatigued. As energy continues to be consumed, it will have adverse effects on personal health, work performance, organizational productivity and even patient safety in the long run. However, Fig. 1 shows that fatigue is lower in the high level of organizational identification group than in the low level of organizational identification group, regardless of the level of emotional labor.

Several limitations should be noted in this study. Firstly, the cross-sectional design cannot determine the directionality and the causal relationship of the obtained associations, which may affect the rigor of the study results. Future research is warranted to confirm the definite causality. Secondly, due to the application of self-reported questionnaires, there may be recall biases during the information collection, and thus it is difficult to objectively evaluate the variables included in the study, which may affect the authenticity of the findings to some extent. Thirdly, the generalizability of the findings may be limited by convenience sampling used for the recruitment of participants, because this method cannot guarantee that every member of the nurse population has the same probability of being drawn. However, this study may still provide a reference for longitudinal studies or interventions. In future research, a longitudinal mediation model can be employed to investigate the association between these variables by random sampling. Finally, this study was conducted in the specific context of Chinese nurses, and cultural differences may limit the generalizability of the findings to other cultures.

Conclusions

This study demonstrated the role of fatigue in partially mediating the effect of nurses' emotional labor on presenteeism and the role of organizational identification in moderating the first half pathway of the mediation model. The research findings are of great significance to nursing practice. Presenteeism can be reduced by the improvement of emotional management skills and the alleviation of fatigue. It may be beneficial for nurse managers to organize training in their units, regularly evaluate nurses' performance and thus determine the reasons for the increase or decrease, and reduce emotional burden by planning activities. In addition, nursing managers should create a positive organizational atmosphere in their work, determine working hours and shifts according to the opinions of nurses, provide nurses with more emotional support, help them reduce fatigue caused by job demands, strengthen organizational identification, and prevent presenteeism.

Practical implications

Emotional labor education and training, fatigue intervention and organizational identification improvement should be conducted to deal with presenteeism among Chinese nurses, according to the research results. Nursing managers should implement the Employee Assistance Programs (EAP), which is a systematic service and problem-solving plan. It is necessary to create a comfortable environment for nurses and establish emotional release channels, which can be equipped with places such as cafes and gyms. Nurses can talk with family members or friends and do exercise to relieve stress and fatigue and adjust their negative emotions. Managers can provide emotional management training and psychological counselling that encourages nurses to share emotional experiences. Furthermore, it is imperative to establish a supportive organizational framework to improve nurses' organizational identification, including reasonable job demands, standardized reward and punishment systems, and friendly family support policies. Understandably, managers all hope to promote the interests of their organizations. However, they must know that individual-related outcomes are equally important. Managers should mitigate the negative effects of organizational identification by encouraging nurses to maintain a benign balance between work and personal health. Some practical measures should be taken, such as the implementation of reasonable scheduling methods, the maintenance of appropriate nurse-patient ratios to avoid excessive workload for nurses, the training of nurses to learn emotional self-regulation, and the organization of activities to reduce emotional burden.

Supplementary Information

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Supplementary Material 1

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Author contributions
XMZ and ZR conceived and designed the study. ZR, AQY and WJL contributed to data acquisition and management. ZR and HJL contributed to the statistical analysis plan and data analysis. ZR drafted the manuscript. XMZ, HJL and CZ participated in revising the manuscript. All authors have approved the final manuscript.

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Data availability
The data that support the findings of this study are available from the corresponding author, XMZ, upon reasonable request.

Declarations

Ethics approval and consent to participate
This study received approval from the Research Ethical Committee of Jilin University School of Public Health (No. 2022-05-18). All nurses were provided signed informed consent in accordance with the Declaration of Helsinki.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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