Mediating role of emotional labour strategy in the association between patient/visitor incivility and nurses’ fatigue: a cross-sectional study

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ABSTRACT

Objective  Fatigue is a common problem among nurses, and patient/visitor incivility is thought to lead to nurses’ fatigue. However, the mechanism by which patient/visitor incivility leads to nurses’ fatigue has not been well studied. The aim of this study is to examine whether the association between patient/visitor incivility and fatigue among Chinese nurses is mediated by emotional labour strategy.

Design  A cross-sectional study.

Methods  In November 2019, a stratified cluster sample of 1207 nurses from two hospitals in China was used to collect data on fatigue, patient/visitor incivility and emotional labour strategy through online questionnaires. Emotional labour strategy has three dimensions: surface acting (SA), deep acting and natural acting. Complete responses were provided by 1036 (85.8%) participants. Student’s t-test, one-way analysis of variance, Pearson correlation analysis and the PROCESS procedure (A modeling macro installed in SPSS to analyse mediation) were adopted to analyse the data.

Results  Patient/visitor incivility and SA were positively related to fatigue (p<0.01), while natural acting was negatively related to fatigue (p<0.01). SA played as a mediator in the association between patient/visitor incivility and nurses’ fatigue (95% CI 0.047 to 0.113, p<0.05).

Conclusion  Patient/visitor incivility could contribute to Chinese nurses’ fatigue. When nurses were exposed to patient/visitor incivility, they were more likely to use the SA emotional labour strategy, which would lead to fatigue. Nursing administrators should be aware of the seriousness of nurses’ fatigue.

INTRODUCTION

Fatigue is a common problem in many occupational groups, particularly in the high-pressure, high-burden medical industry. The North American Nursing Diagnosis Association defined fatigue as a constant sense of tiredness and decreased physical and mental work capacity that cannot be relieved by rest.¹ Nurses have a high incidence of fatigue, and any factor present in clinical nursing will result in the occurrence of nurses’ fatigue.²–⁴ It can lead to absenteeism, musculoskeletal diseases, and mental and emotional issues.⁵ ⁶ It has been shown to impair a nurse’s ability to work, putting patients at risk of getting their medication at the wrong time and dose.⁷ Research has focused on the fatigue problem faced by nurses, with the goal of developing evidence-based fatigue management strategies and indicators to improve nurses’ sense of satisfaction at work and the quality of nursing services.⁸ ⁹

The job demands–resources (JD-R) model is an essential theoretical foundation that has been widely used in research to understand how fatigue develops in nurses. In 2001, Demerouti et al proposed the JD-R model and divided job characteristics into job demands and resources. When work demands exceed work resources, it could result in a variety of negative organisational behaviours and health consequences, such as job burnout and fatigue.¹⁰ According to previous studies, intense workload, frequent night shifts, fewer nurses, nurse staff levels and insufficient organisational support are all factors that contribute to fatigue.¹¹–¹⁴

In China, there is a critical shortage of nurses. According to WHO statistics from 2012, China had only 1.38 nurses and midwives per 1000 people, compared with

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Mediation analysis was performed to explore the mechanism between patient/visitor incivility and nurses’ fatigue through emotional labour strategy.

⇒ A culturally adapted and validated scale of patient/visitor incivility was used.

⇒ This is a cross-sectional study, and no causal relationship can be inferred.

⇒ Data were collected through an online questionnaire.

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pressure from patients/visitors in workplaces, which may result in nurses' fatigue. According to research, under nurses' discordant relationship with patients/visitors may undoubtedly aggravate their fatigue level. This kind of situation of nurses needs to be solved urgently.

There have been many studies on nurses' fatigue from other perspectives in China, but nursing is an interactive profession that needs constant interaction with patients. Therefore, it is necessary to study nurses' fatigue from the perspective of interpersonal interaction. According to Bültmann et al, workplace relationships can contribute to the generation and development of fatigue. As a result, nurses' discordant relationship with patients/visitors may result in nurses' fatigue. According to research, under working conditions in China, nurses generally face more pressure from patients/visitors in workplaces, which may positively affect fatigue.

Workplace incivility refers to low-intensity social behaviour that is generally regarded as unacceptable in the workplace and has the potential to cause intentional harm. According to the American Nurse Association, incivility is defined as 'one or more rude, discourteous, or disrespectful actions that may or may not be motivated by a negative intent'. Typical workplace incivility includes speaking loudly, being condescending, slandering, ignoring, gossiping and so on. The three main characteristics of workplace incivility are the ambiguity of intention, diversity of sources and event isolation. As can be seen, the form of incivility is mild, and recipients and managers frequently mistakenly believe that its influence is weak and short-term, rarely causing enough attention. In nursing services, patient/visitor incivility is a type of workplace incivility in which patients and/or their visitors are the perpetrators and nurses are the recipients. In the context of China's tense nurse–patient relationship, nurses frequently face incivility from patients/visitors. Patient/visitor incivility in the workplace can have a variety of consequences for nurses, including adverse health consequences, decreased job satisfaction, decreased job productivity and job quit. Although existing research has always focused on the influencing factors of nurses' fatigue, there are few relevant studies on the influence of patient/visitor incivility on nurses' fatigue, so it is necessary to conduct research.

Is the nurse’s emotional regulation used in response to patient/visitor incivility? Emotional labour is the process of management of feelings to create a publicly observable facial and bodily display. According to Hochschild, emotional labour is essentially an emotional regulation behaviour conducted by individuals according to the emotional behaviour management goals formulated by the organisation. It distinguishes two strategies that can be used for emotional labour: surface acting (SA) and deep acting (DA). SA refers to that where employees modify their facial expressions to achieve emotional states inconsistent with their inner feelings to conform to the requirements of the organisation. DA refers to that where employees achieve the emotional state consistent with customers by empathising with customers. According to Diefendorff et al, natural acting (NA) can also be used as a strategy for emotional labour. NA means that employees do not process their emotions in any way. Such honest expression of their performance will appear to be sincere. It is a quality related to good customer service and meets the expectations of the organisation for employees. Many occupations in the tertiary/service industries, particularly in the field of healthcare, are considered to require emotional labour. When nurses are subjected to patient/visitor incivility, they will employ different emotional labour strategies, resulting in a range of outcomes. There is, however, no study that looks into the effect of different emotional labour strategies on fatigue in nurses when they are exposed to patient/visitor incivility. As a result, it should be clear whether emotional labour strategy acts as a mediator between patient/visitor incivility and fatigue.

According to the aforementioned, the aims that this study intends to clarify are as follows: (1) examine the associations of patient/visitor incivility and emotional labour strategy with nurses' fatigue, and (2) investigate whether the association between patient/visitor incivility and nurses' fatigue is mediated by emotional labour strategy.

METHODS
Study design and sample
A cross-sectional study was conducted in two tertiary public hospitals in Beijing and Xuzhou (a city in Jiangsu Province) in November 2019. The two hospitals have 1380 beds and 1500 beds, respectively, and mainly provide regional health services. Because China has a vast territory, public hospitals generally provide regional health services.

A total of 1207 nurses were chosen using a stratified cluster sampling method. The primary sampling clusters were departments. All departments in the sampled hospital were stratified by clinical disciplines. From each clinical discipline, a sample of departments was randomly selected according to the proportion of registered nurses of clinical disciplines, such as internal medicine, surgery, paediatrics, obstetrics, emergency and intensive care medicine, and all nurses in each selected department were investigated. Then, ensured that the nurses who participated in the study fully comprehended the purpose and significance of the study, and could actively participate in the research. Then, our investigators sent a WeChat app link to the sampled nurses’ mobile phones, which pointed to a set of self-administered questionnaires.
These questionnaires were filled out anonymously after each participant provided informed consent. Every day, the survey’s progress was tracked. We checked the accuracy of the data and excluded the questionnaires if (1) age was greater than 60 years old; (2) response time was less than 180 s; or (3) there were logical contradictions in the response. Two members of the research team checked all the data for consistency. Finally, 1036 valid questionnaires were collected (effective response rate: 85.8%). The gender-level, age-level and educational-level distributions of the sampled nurses in this study were compared to general Chinese registered nurses.21

Data collection
Questionnaires
Chalder et al created the Fatigue Scale, which was used to assess the severity of fatigue.22 It is divided into two categories: physical fatigue (eight items) and mental fatigue (six items). The scale consists of 14 items, each of which is a fatigue-related question. Answer ‘yes’ (1) or ‘no’ (0) depended on how well the content corresponds to the subject. The scale has a total score of 14 points, with ≥7 points indicating the presence of a fatigued state. The Chinese Fatigue Scale (CFS) has high reliability and validity and has been widely used in all walks of life.23 24 The Cronbach’s alpha coefficient of the total CFS in this study was 0.79.

The patient/visitor subscale of the Nursing Uncivilised Scale established by Guidroz et al was used to investigate patient/visitor incivility.15 Nurses are asked to reflect on their interactions with patients and visitors and fill out questionnaires.15 The original Patient/Visitor Incivility Subscale has 10 items, each of which is scored on a 5-point Likert scale. Each item has the same answer at all five levels: strongly agree (1), agree (2), generally agree (3), disagree (4) and strongly disagree (5). These projects fall into two categories: disrespect and dissatisfaction with being replaced. The higher the overall score, the more uncivilised the patient/visitor is. We used Brislin’s translation model for the translation and cross-cultural adaptation of the Patient/Visitor Incivility Subscale after obtaining permission from the original author.25

The subscale was independently translated into Chinese by two associate professors with overseas working experience in social medicine and health human resource management. To determine the correct translation, the research team compared the two Chinese versions. One college English teacher and one graduate student proficient in English and nursing management translated the proofread Chinese version back into English. The back-translation version was determined after a comparison. Finally, we determined the final Chinese version of the Patient/Visitor Incivility Subscale by comparing the reverse translation version to the original version. We formed an expert committee composed of psychologists, nurses, language experts and all translators involved in the translation process to oversee the cross-cultural adaptation of the Patient/Visitor Incivility Subscale.

Following good translation validity and content validity, 20 clinical nursing staff were chosen for the preinvestigation, and they all had a good understanding of the final Chinese version of the Patient/Visitor Incivility Subscale.

In the current study, four items were deleted that were cross-loaded (factor loading was 0.4 or higher on more than one factor), including ‘are condescending to me’, ‘make personal verbal attacks against me’, ‘pose unreasonable demands’ and ‘make insulting comments to me’. As a result, the remaining six items were used in the following analysis. The Patient/Visitor Incivility Subscale had a Cronbach’s alpha coefficient of 0.92. In terms of construct validity, confirmatory factor analysis revealed acceptable goodness of fit index for a two-factor model. The root mean square error of approximation (RMSEA) was less than 0.05 (RMSEA=0.043), and the standardised root mean square residual (SRMR) was less than 0.05 (SRMR=0.018), whereas the Goodness-of-Fit Index (GFI), Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) were all greater than 0.9 (GFI=0.984, CFI=0.979 and TLI=0.960). The factor loadings of the subscale’s items ranged from 0.814 to 0.949.

Diefendorff et al developed the Emotional Labour Scale, a 14-item scale used to study emotional labour strategy.19 The scale has three dimensions: SA (seven items), DA (four items) and NA (three items). The scale was graded using a 5-point Likert scale (1 means strongly agree and 5 means strongly disagree). The higher the score, the more emotional labour strategies are used. Considering the current sample, we made some changes to the wording of the scale. For example, we replaced ‘customers’ with ‘patients’. The Chinese Emotional Labour Scale is widely used by people from all walks of life and has high reliability and validity.26 27 In this study, Cronbach’s alpha coefficients for the SA, DA and NA subscales were 0.88, 0.79 and 0.89, respectively.

Social–demographic variables
Age (years), gender, marital status and education level were included as social–demographic variables. Marital status was classified into married/cohabited and single/widowed/divorced/separated. Educational level was divided into two types: college or higher, and junior college or lower.

Working characteristic variables
Job rank, monthly income (RMB, yuan/US$), daily working time (hours), shift and night shift were all used as working characteristic variables. Job rank was divided into staff and director, and monthly income was divided into ≤5000 yuan/US$725, >5000 yuan/US$725–8000 yuan/US$1160 and ≥8000 yuan/US$1160. Daily working time was divided into ≤8-hour and >8-hour groups. Yes or no was used to define the work and night shifts.

Data analysis
First, before data analysis, a P–P diagram and skewness and kurtosis were used to test the normality of the data.
The skewness was between −0.799 and 1.206, and the kurtosis was between −1.091 and 2.149, indicating the data was an approximately normal distribution. Then, Student’s t-test and one-way analysis of variance were used to determine the group differences in fatigue. Pearson’s correlation test was used to examine the correlation between age, fatigue, patient/visitor incivility and emotional labour strategy. The relation between patient/visitor incivility and emotional labour strategy (SA, DA and NA) with fatigue was investigated using hierarchical linear regression analysis. Based on 5000 bootstrapped samples, the present study used the PROCESS procedure to investigate whether three emotional labour strategies mediate the association between patient/visitor incivility and fatigue. Estimate the bias-corrected (BC) 95% CI for each mediating variable; if the BC 95% CI does not include 0, it indicates a significant mediating effect. For statistical analysis, SPSS V.21.0 and AMOS V.25.0 were used, and a double-tailed p value of <0.05 was considered statistically significant. Data missing more than 20% had been deleted; otherwise, the average value method had been used.

### Patient and public involvement
There were no patients involved in this study.

### RESULTS

#### Participant characteristics
Table 1 shows the relationship between participants' demographic variables, working characteristic variables and fatigue. Men and women showed no discernible difference in fatigue levels. Nurses who were married or cohabited reported feeling more fatigued than those who were single, divorced, widowed or separated ($t$=−3.207, $p$=0.001). Nurses with a college education or higher were more fatigued than those with a junior college education or lower ($t$=−3.275, $p$=0.001). When working characteristics were taken into account, daily working time was strongly related to fatigue scores ($t$=−6.522, $p$<0.001). The fatigue of nurses was unaffected by their job rank, monthly income, shift or night shift.

#### Correlations among study variables
The correlations between the study variables are shown in table 2. The average age of the sample was 30.29±5.452

| Variables                             | n   | %    | Mean | SD  | F/t  | P value |
|---------------------------------------|-----|------|------|-----|------|---------|
| Gender                                |     |      |      |     |      |         |
| Men                                   | 43  | 4.15 | 7.37 | 3.512| −0.745| 0.457   |
| Women                                 | 993 | 95.85| 7.80 | 3.683|      |         |
| Marital status                        |     |      |      |     |      |         |
| Single/divorced/widowed/separated     | 474 | 45.75| 7.38 | 3.704| −3.207| 0.001   |
| Married/cohabited                     | 562 | 54.25| 8.12 | 3.620|      |         |
| Educational level                     |     |      |      |     |      |         |
| Junior college or lower               | 386 | 37.26| 7.30 | 3.745| −3.275| 0.001   |
| College or higher                     | 650 | 62.74| 8.07 | 3.605|      |         |
| Job rank                              |     |      |      |     |      |         |
| Staff                                 | 983 | 94.88| 7.82 | 3.689| 1.152 | 0.131   |
| Director                              | 53  | 5.12 | 7.04 | 3.357|      |         |
| Monthly income (RMB, yuan/US$)        |     |      |      |     |      |         |
| ≤5000/725                             | 335 | 32.3 | 7.58 | 3.688| 0.729 | 0.483   |
| >5000–8000/725–1160                   | 489 | 47.2 | 7.87 | 3.697|      |         |
| ≥8000/1160                            | 212 | 20.5 | 7.90 | 3.607|      |         |
| Daily working time (hours)            |     |      |      |     |      |         |
| ≤8                                    | 713 | 68.82| 7.31 | 3.708| −6.522| < 0.001 |
| >8                                    | 323 | 31.18| 8.83 | 3.378|      |         |
| Shift                                 |     |      |      |     |      |         |
| Yes                                   | 769 | 74.23| 7.91 | 3.721| 1.887 | 0.059   |
| No                                    | 267 | 25.77| 7.42 | 3.521|      |         |
| Night shift                           |     |      |      |     |      |         |
| Yes                                   | 801 | 77.32| 7.84 | 3.693| 0.919 | 0.359   |
| No                                    | 235 | 22.68| 7.59 | 3.613|      |         |

SD, standard deviation.
years, while fatigue received an average score of 7.78 ± 3.675. Age had no correlation with study variables. Patient/visitor incivility was positively associated with SA (r = 0.391, p < 0.01), DA (r = 0.261, p < 0.01) and fatigue (r = 0.370, p < 0.01) but had no relation with NA (r = −0.036, p > 0.05). SA (r = 0.313, p < 0.01) and DA (r = 0.168, p < 0.01) were found to be positively correlated with fatigue, whereas NA (r = −0.088, p < 0.01) was found to be negatively correlated with fatigue.

Associations of patient/visitor incivility and emotional labour strategy with fatigue

The results of hierarchical linear regression analysis are shown in Table 3. Multicollinearity was not an issue in estimation because all of the independent variables had variance inflation factors of less than 2. After controlling for covariables in the first step, the second step revealed that patient/visitor incivility and fatigue were positively correlated (β = 0.359, p < 0.001). Patient/visitor incivility compensated for 12.7% of the total variation contributing to fatigue. The third step showed that SA had a positive relation with fatigue (β = 0.185, p < 0.001), whereas NA had a negative relation with fatigue (β = −0.083, p = 0.008). However, DA did not have a significant relation with fatigue (β = 0.002, p = 0.951). An extra 3.3% of fatigue variation was attributed to these emotional labour strategies. The absolute value of the patient/visitor incivility decreased in step 3 compared with step 2. As a result, emotional labour strategy may play a mediating role in the relationship between patient/visitor incivility and fatigue. In addition, statistical power was calculated using G*Power software with a post hoc method based on increased R² (0.033), α (0.05), sample size (1,036), the number of tested predictors (3) and the total number of predictors (9). Thus, the present sample’s statistical power (1−β) was 0.9996.

Mediating roles of emotional labour strategy

The results of the PROCESS procedure are shown in Table 4. The findings revealed a positive relationship between SA and patient/visitor incivility (a = 0.392,
Visitor incivility has a negative impact on the quality of care. According to a study conducted in Saudi Arabia, patient/visitor incivility can be considered customers of the nursing service. The results showed a significant association between insomnia and fatigue. A variety of factors can cause nurse fatigue, and nurses’ fatigue has been shown to impact both the health of nurses and the safety of patients. As a result, hospital and nursing administrators should be aware of nurses’ fatigue and take the initiative to implement prevention and control strategies.

In this study, there was a link between patient/visitor incivility and fatigue. Customer mistreatment is a term used in the service industry to describe the poor quality of customer treatment that a service provider receives at work. Customer mistreatment encompasses a wide range of behaviours, including customer incivility. According to research, customer mistreatment can result in employee burnout; causes psychological stress, negative emotions, and emotional exhaustion; and harms the well-being of employees. Patients and their visitors can be considered customers of the nursing service. According to a study conducted in Saudi Arabia, patient/visitor incivility has a negative impact on the quality of nurses’ professional lives, with the experience of patient/visitor incivility increasing nurses’ burnout. Furthermore, Guidroz et al. discovered that when nurses were subjected to rude behaviour from patients/visitors, they would increase their level of pain, decrease their work efficiency and increase their intention to quit. Nursing is a challenging profession. If nurses notice that they are not being treated with respect at work, such as verbal abuse, doubt or reprimand, they will exhibit a variety of negative organisational behaviours and mental health outcomes. This has a negative impact on job performance, so it is critical to provide a respectful working environment.

According to the findings of this study, the three emotional labour strategies had different effects on nurses’ fatigue. SA, DA, and fatigue were found to be positively related, whereas NA and fatigue were found to be negatively related. Nurses must make external emotional representations that are inconsistent with their actual emotional experiences when using SA emotional labour strategy. This places a significant strain on nurses’ physical and mental resources. At the same time, when the fatigue of nurses is not timely relieved, they have to communicate with the next patient/visitor, causing emotional labour again. Although nurses who use DA emotional labour strategy have a significant positive impact on the development of both individuals and organisations, nurses must expend a significant amount of energy (physical and mental resources) to adjust their feelings deeply. The occupational environment of nurses in China, with relatively few human resources and a high workload, is likely to exacerbate the consumption of fatigue coping resources.

### DISCUSSION

In this study, the nurses’ fatigue score averaged 7.78±3.68, suggesting that nurses’ fatigue level is high. In comparison to previous studies on Chinese nurses, the fatigue level in our study is slightly lower in Xi’an but higher in Ningbo. Furthermore, the fatigue level of nurses in this study is higher than that of the general Chinese population (5.50±3.09). Nurses’ fatigue is also a significant issue in Brazil. According to da Silva et al., 52% of nurses experienced fatigue. In Poland, half of the nurses exceeded the fatigue threshold, and there was an overall association between insomnia and fatigue. A variety of factors can cause nurse fatigue, and nurses’ fatigue has been shown to impact both the health of nurses and the safety of patients. As a result, hospital and nursing administrators should be aware of nurses’ fatigue and take the initiative to implement prevention and control strategies.

| Mediators | a   | b   | a×b (BC 95% CI) |
|-----------|-----|-----|----------------|
| SA        | 0.392** | 0.197** | 0.077* (0.047 to 0.113) |
| DA        | 0.262** | 0.007 | 0.002 (−0.018 to 0.024) |
| NA        | −0.037 | −0.085** | 0.003 (−0.002 to 0.012) |

**a** indicates the association of emotional labour strategy with patient/visitor incivility. **b** indicates the association of emotional labour strategy with nurses’ fatigue. **a×b** indicates the mediating role of emotional labour strategy. Age, gender, marital status, educational level and daily working time were adjusted.

*P<0.05, **P<0.01.

BC 95% CI, bias-corrected 95% confidence interval; DA, deep acting; NA, natural acting; SA, surface acting.
Fatigue is a significant issue for Chinese nurses. Patient/visitor incivility was found to be positively associated with fatigue. 

SA was found to be positively associated with fatigue, while NA was found to be negatively associated with fatigue. There was, however, no significant relation between DA and fatigue. Patient/visitor incivility may partially increase fatigue by adjusting the SA strategy. As a result, emotional labour training for nurses in China should be strengthened.

**CONCLUSION**

Fatigue is a significant issue for Chinese nurses. Patient/visitor incivility was found to be positively associated with fatigue. SA was found to be positively associated with fatigue, while NA was found to be negatively associated with fatigue. There was, however, no significant relation between DA and fatigue. Patient/visitor incivility may partially increase fatigue by adjusting the SA strategy. As a result, emotional labour training for nurses in China should be strengthened.

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