

BMJ Open Relationships between transformational leadership, perceived social support, occupational coping self-efficacy and presenteeism among Chinese ICU nurses: a cross-sectional study

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To cite: Wu J, Li Y, Lin Q, *et al.* Relationships between transformational leadership, perceived social support, occupational coping self-efficacy and presenteeism among Chinese ICU nurses: a cross-sectional study. *BMJ Open* 2025;15:e091462. doi:10.1136/bmjopen-2024-091462

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<https://doi.org/10.1136/bmjopen-2024-091462>).

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Received 21 July 2024
Accepted 08 April 2025



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ABSTRACT

Objective This study aimed to investigate the relationship between transformational leadership and presenteeism among intensive care unit (ICU) nurses in tertiary hospitals and further investigate the chain-mediated role of perceived social support and occupational coping self-efficacy.

Design This is a cross-sectional survey study.

Setting Six tertiary hospitals in Sichuan Province, China.

Participants 590 ICU nurses were recruited from six tertiary hospitals in China for the survey.

Primary and secondary outcome measures

Presenteeism of ICU nurses was the primary outcome indicator. Transformational leadership, perceived social support and occupational coping self-efficacy were secondary outcome indicators. The transformational leadership scale, perceived social support, occupational coping self-efficacy and Stanford presenteeism scale were used to investigate ICU nurses through convenience sampling.

Results The presenteeism score of ICU nurses was 15.46 ± 4.45 (mean $\pm$ SD), in which the incidence of high presenteeism was 53.90%. Correlation analysis showed that presenteeism was negatively correlated with transformational leadership, perceived social support and occupational coping self-efficacy ($r = -0.412$ to -0.486 ; $p < 0.05$). Perceived social support partially mediated the relationship between transformational leadership and presenteeism, with an effect value of 0.055 (95% CI: -0.102 to -0.012 ; $p < 0.001$); occupational coping self-efficacy partially mediated the relationship between transformational leadership and presenteeism, with an effect value of 0.042 (95% CI: -0.074 to -0.017 ; $p < 0.001$); perceived social support and occupational coping self-efficacy chain-mediated between transformational leadership and presenteeism, with an effect value of 0.029 (95% CI: -0.046 to -0.016 ; $p < 0.001$).

Conclusion ICU nurses' perceived social support and occupational coping self-efficacy are chain-mediated between transformational leadership and presenteeism. Therefore, to reduce nurses' presenteeism, nursing managers should adopt targeted interventions based on

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This study included transformational leadership, perceived social support and occupational coping self-efficacy in the analysis of presenteeism among intensive care unit nurses, providing a new perspective on the relationship between transformational leadership and presenteeism.
- ⇒ This study was cross-sectional, and causal relationships between variables could not be inferred.
- ⇒ This study only surveyed six tertiary hospitals in Sichuan Province, China, and there were limitations in the sample.

the factors influencing them to improve transformational leadership and enhance their perceived social support and occupational coping self-efficacy.

INTRODUCTION

In recent years, the study of the relationship between the health status of occupational groups and the economy has increasingly become a hot spot of scholars' attention. Health, as one of the most essential human capitals, not only affects individual labour performance but also influences a country's or region's economic growth dynamics. Presenteeism, also known as low health-related productivity, is prevalent among occupational groups, especially in the healthcare industry. There is no standardised concept of presenteeism, which was first proposed by Professor Cooper in 1996, describing it as the phenomenon of working when one should take a break from work due to illness or extended working hours that cause a reduction in health-related productivity.¹ In 2005, Kivimäki *et al* expanded the concept of presenteeism to include working when one is in an unhealthy state.² A systematic

evaluation by Webster *et al* showed that the reported prevalence of presenteeism in the occupational population ranged from 35% to 97%, influenced by organisational factors, job characteristics and personal factors.³ As a major force in healthcare, nurses are a high-risk, high-stress and high-work-intensity population. In the global shortage of nursing human resources, nurses are at high risk of presenteeism, especially in developing countries or poor areas, due to heavy workloads, human resource constraints, shift work, complex interpersonal relationships and inadequate remuneration packages.⁴

It has been reported that 85% of healthcare workers have had the experience of attending work with illness,⁵ while the global rate of presenteeism reporting among nurses is about 49.2%,⁶ with 65.0% in the USA,⁷ 48.7% in New Zealand⁸ and a high rate of 94.25% of presenteeism reporting among nurses in China.⁹ The impact of presenteeism on individuals and organisations is often multifaceted; on the one hand, it affects personal health, resulting in decreased productivity, lower work efficiency and increased burnout, which affects professional well-being. On the other hand, it affects patient safety by increasing the risk of medication errors, falls and infections. In addition, presenteeism can have a series of negative impacts on organisational development, directly or indirectly increasing the economic loss of the organisation. Studies have shown that due to differences in the level of economic growth, the financial loss caused by presenteeism of nurses varies slightly in different countries, from about US\$4.38 billion per year in China,⁹ US\$3–12 billion per year in the USA¹⁰ and about US\$3055 per capita in Japan.¹¹ Therefore, considering the negative consequences of presenteeism on multiple domains, such as individuals, patients and organisations, it is necessary to explore the mechanisms and pathways of its impact from various perspectives.

According to the 2020 State of Global Nursing Report, there is currently a shortfall of up to 5.9 million nurses worldwide, with a projected shortfall of 5.7 million by 2030, with the shortage of nurses in developing countries and poorer regions particularly prominent. Although the shortage of nurses in China has dramatically improved in recent years, there is still a gap from the global average. Whether the allocation of human resources is reasonable and whether the appropriate ratio directly affects the quality of nursing services, work efficiency and healthcare costs, thus affecting the quality and safety of patient services.^{12 13} The intensive care unit (ICU), as a special ward for the centralised treatment, resuscitation and monitoring of patients with acute, critical and severe illnesses in medical institutions, is characterised by solid professionalism, heavy workload, modern equipment and complex treatment, which makes nurses' workload challenging and stressful, leading to prominent chronic health problems such as chronic pain, fatigue, gastrointestinal disorders and sleep disorders. Research shows that the average ICU bed-to-nurse ratio in China is 1:1.86, with 63.3% of the regions having a 1:1.5 to <2.0

ratio.¹⁴ Therefore, the shortage of human resources for ICU nurses is still prominent in China. Presenteeism of ICU nurses is also notable due to the influence of factors such as dedication, health status, work pressure, remuneration and poor job replacement. Therefore, it is essential to pay attention to the current situation of ICU nurses' presenteeism and its influence mechanism and to develop targeted interventions to improve nurses' health status and patient safety.

In organisations, leadership style is an essential source of employees' emotional and psychological experience, affecting their psychological well-being and job performance.¹⁵ Transformational leadership refers to a leader's ability to guide employees to develop proper values, resilience and a positive mindset by making them aware of their responsibilities, stimulating high-level needs and building mutual trust. Transformational leadership has four dimensions: moral example, charisma, personalised care and visionary inspiration. As a work resource, leadership style is an essential organisational contextual variable affecting employees. Transformational leadership style can improve employee performance and reduce impaired productivity by exuding leadership charisma, reinforcing leadership inspiration and personalised care to stimulate employees' intellectual and higher-level needs.¹⁶ The positive effects of transformational leadership have been widely studied and confirmed regarding nurses' resilience,¹⁷ burnout,¹⁸ job satisfaction¹⁹ and improved patient safety outcomes.²⁰ Research on transformational leadership's impact on presenteeism has not been reported. Based on this, we propose research hypothesis 1: transformational leadership negatively affects presenteeism and can further reduce the occurrence of presenteeism through mediating variables.

Previous research on the factors influencing nurses' presenteeism has focused on demographic characteristics such as length of service and job title²¹; health conditions such as subfertility symptoms, chronic bodily pain, hypertension and other chronic illnesses^{22 23}; and work-related factors such as pay and income, work environment and occupational stress.²⁴ The synergistic effects of positive psychological work resources, such as social support and self-efficacy, are often overlooked.

Some studies have shown that social support directly predicts the mental health of healthcare workers and indirectly affects mental health through personal resilience, which directly or indirectly affects work efficiency. Perceived social support refers to an individual's emotional experience and degree of satisfaction in feeling respected, supported and understood. It consists of three main components: family support, friend support and material or other spiritual support from the community. Perceived social support as a positive psychological resource is one of the essential protective resources for individuals, which helps to alleviate work pressure and negative emotions, maintain a healthy psychological state and a positive work state and thus reduce the phenomenon of presenteeism. The social support buffer model

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also points out that perceived social support can inhibit or buffer the adverse effects of stressful events on individuals.²⁵ Some studies have shown that presenteeism is negatively related to marine social support and that high social support may improve presenteeism by reducing stress and increasing job satisfaction and performance.²⁶ In addition, leadership styles can improve employees' stress coping and handling abilities through support for employees, which can stimulate employees' motivation, work attitudes and behaviours and enhance the level of perceived social support. Based on this, we propose the following research hypotheses:

Research hypothesis 2: transformational leadership can influence presenteeism among ICU nurses through the mediating role of perceived social support.

Occupational coping self-efficacy refers to an overarching self-efficacy of employees to effectively cope with and accomplish nursing care. Self-efficacy, as a positive psychological resource within an individual, is essential for enhancing occupational coping ability, reducing work stress and burnout, improving mental health and enhancing work efficiency and work quality. Research shows that the lack of coping self-efficacy may directly or indirectly affect work engagement through stress and interpersonal relationships, making employees feel inefficient.²⁷ The Job Demands-Resources Model states that each occupation has specific risk factors associated with job stress and that when employees have high levels of job demands and job resources, it stimulates personal growth and development and helps to promote good organisational outcomes.²⁸ Transformational leadership, perceived social support and occupational coping self-efficacy are important to nurses in achieving organisational goals as overarching components of job demands and resources. Currently, there is evidence regarding the influential relationship between transformational leadership, perceived social support and self-efficacy. However, it is not yet known whether occupational coping self-efficacy mediates the relationship between transformational leadership and presenteeism, and whether there is a chain of mediation between perceived social support and occupational coping self-efficacy between transformational leadership and presenteeism. Based on these analyses, we propose the following research hypotheses:

Research hypothesis 3: transformational leadership can influence presenteeism among ICU nurses through the mediating role of occupational coping self-efficacy.

Research hypothesis 4: transformational leaders can influence presenteeism among ICU nurses by mediating the chain of perceived social support and occupational coping self-efficacy.

Based on the above analysis, this study used the JD-R model as a theoretical guide to explore the influence mechanism of presenteeism of Chinese ICU nurses from multiple perspectives of job requirements (transformational leadership), job resources (perceived social support) and personal resources (occupational coping self-efficacy) and to establish a hypothetical model

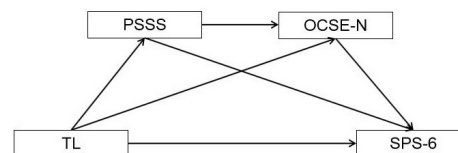


Figure 1 Hypothesised model of the relationship between transformational leadership (TL), perceived social support (PSSS), occupational coping self-efficacy (OCSE-N) and presenteeism (SPS-6).

(figure 1) to provide a theoretical basis for the reduction of presenteeism of ICU nurses.

METHODS

Participants

In March to April 2023, the cluster random sampling method was used to divide Sichuan Province into five regions: north Sichuan, east Sichuan, west Sichuan, south Sichuan and Chengdu City. One tertiary hospital was randomly selected from each region of north Sichuan, east Sichuan, west Sichuan and south Sichuan. Two tertiary hospitals were randomly selected from Chengdu City, and finally, the ICU nurses in these six tertiary hospitals were surveyed (including Deyang People's Hospital, Sichuan Provincial People's Hospital, Suining Central Hospital, Yibin First People's Hospital, Affiliated Hospital of Sichuan North Medical College, Leshan People's Hospital). Inclusion criteria: holders of professional qualification certificate for nurses, engaged in ICU clinical work for more than 1 year; no history of alcohol or drug addiction, no history of mental illness; no history of psychiatric disease-related drugs; informed consent and voluntary participation. Exclusion criteria: internship, regulation training and advanced training nurses; those currently on sick leave, maternity leave and other absenteeism. According to the Kendall sample size rough estimation method,²⁹ the variables in this study were 24 (14 general demographic information + four dimensions of the Transformational Leadership Scale + 3 dimensions of the Perceived Social Support Scale (PSSS) + 2 dimensions of the Occupational Coping Self-Efficacy + 1 dimension of Stanford Presenteeism Scale). At least 5–10 times the number of variables were selected, considering 20% of invalid questionnaires and the sample size ranged from 150 to 300 cases. A total of 635 questionnaires were recovered in this study; 45 invalid questionnaires with regular filling and logical errors were excluded, and 590 valid questionnaires were finally recovered, with an effective recovery rate of 92.9%.

Procedures

The data for this study were collected anonymously using an electronic questionnaire called 'Questionnaire Star'. After obtaining the consent of the relevant person in charge of each hospital, a researcher

was identified in each hospital, and uniform training was provided to all researchers to clarify the purpose, significance and method of filling out the questionnaires in this study. After the training, the survey researcher distributed the questionnaire to the hospital ICU nurses' WeChat group, and the first page of the questionnaire was set up with a unified filling instruction, explaining the purpose of this study and the precautions for filling in the method. This study followed the principles of informed consent and voluntariness, and the investigators could withdraw from this study at any time in the middle. All survey contents were set as mandatory options in the electronic questionnaire to ensure complete survey information responses.

Measures

Socio-demographic characteristics

14 demographic variables were included in this study work, mainly gender, age, marital and childbearing status.

Transformational Leadership Scale, TL

A questionnaire developed by Li *et al* was used.³⁰ The scale consists of four dimensions with 26 entries. A Likert five-point scale was used, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), with a total score of 26 to 130. Higher scores indicated a higher degree of perceived transformational leadership behaviour. The scale has good reliability and validity, and the Omega index of the scale in this study was 0.971.

Perceived Social Support Scale , PSSS

A questionnaire developed by Blumenthal *et al* was used.³¹ The scale consists of three dimensions with 12 entries. A Likert seven-point scale was used for scoring, ranging from 1 (strongly disagree) to 7 (strongly agree), with a total score of 12–84. Higher scores indicated a higher level of social support felt by the individual. The scale has good reliability and validity, and the Omega index of the scale in this study was 0.956.

Occupational Coping Self-Efficacy Scale, OCSE-N

A questionnaire developed by Pisanti *et al* was used.³² The scale consists of two dimensions with a total of nine entries. A Likert five-point scale was used, ranging from 1 (very non-compliant) to 5 (very compliant), with a total score ranging from 9 to 45, with higher scores indicating higher occupational coping self-efficacy. The scale has good reliability and validity, and the Omega index of the scale in this study was 0.907.

Stanford Presenteeism Scale-6, SPS-6

The scale developed by Koopman *et al* was used.³³ The scale consists of two dimensions with six entries. A five-point Likert scale was used, ranging from 1 (strongly disagree) to 5 (strongly agree), with entries five and six content being reverse scored, for a total score of 6 to 30, with higher SPS-6 scores indicating greater impairment of health productivity due to an individual's presenteeism.

The median score of the scale was used as a boundary to categorise low and high presenteeism. The scale has good reliability and validity, and the Omega index of the scale in this study was 0.787.

Statistical analysis

SPSS 23.0 was used for statistical analysis. Data that exhibited a normal distribution were described using means and SD. Count data were described using frequencies and constituent ratios. To assess differences between groups, independent t-tests or one-way analysis of variance were employed. Pearson correlation analysis was used to analyse the correlation between variables. Hierarchical regression was used to analyse the factors influencing presenteeism among nurses and the mediating role among variables. Based on the bias-corrected percentile bootstrap method, the Bootstrap method (5000 samples) yielded 95% CIs for significance testing. The chained mediation effect was verified through Model six in the PROCESS 4.1 macro programme, with presenteeism as the dependent variable, transformational leadership as the independent variable and perceived social support and occupational coping self-efficacy as the mediating variables. Transformational leadership, perceived social support, occupational coping self-efficacy and presenteeism scores were standardised before testing the model. Direct, mediated (paths a*y (Path 1), x*c (Path 2), a*b*c (Path 3)) and total effects were examined.

Ethical considerations

Ethical review approval for this study was obtained from the Medical Ethics Review Committee of Deyang People's Hospital (No. 2021-04-056-K01). The Declaration of Helsinki conducted all study procedures. Before the survey, the researcher obtained access permission from the hospital administration after providing information about the purpose, methodology and significance of the survey to the investigating organisation. At the beginning of the anonymous survey, an informed consent form was included on the cover of the online questionnaire, and completion and submission of the questionnaire were considered as informed consent and voluntary participation in this survey. All participants consciously and voluntarily agreed to participate in this survey. During the survey, participants were fully informed of their right to withdraw and terminate the survey at any stage without any negative consequences. The researcher ensured that all data collected from the participants were anonymous and confidential to protect their privacy.

RESULTS

General demographic characteristics

Of the 590 participants, 533 (or 90.34%) were female. Nearly 97.46% of the participants were <40 years. Most nurses had a bachelor's degree (81.86%), 66.10% were married, 53.39% were mid-level, 86.27% were clinical nurses and 84.75% were employed under labour contracts. The remaining sociodemographic characteristics (online supplemental table 1).

Descriptive and correlation analysis of the scales

In this study, ICU nurses' transformational leadership scores were 104.06 ± 17.68 , perceived social support scores were 62.58 ± 11.92 , occupational coping self-efficacy scores were 31.13 ± 6.58 and presenteeism scores were 15.46 ± 4.45 . The results of this study showed that transformational leadership, perceived social support and occupational coping self-efficacy were negatively correlated with presenteeism ($r = -0.445$ to -0.412 , and -0.486 , $p < 0.05$), with correlations of moderate strength; transformational leadership was positively correlated with perceived social support and occupational coping self-efficacy ($r = 0.515$, 0.369 , $p < 0.05$), and the correlations were weak and moderate strength, respectively; perceived social support was positively correlated with occupational coping self-efficacy ($r = 0.417$, $p < 0.05$) and the correlation was moderate strength (online supplemental table 2).

Multiple stratified regression analysis

As shown in online supplemental table 3, a multivariate hierarchical regression analysis was conducted with presenteeism as the dependent variable. In the first step, the variables that made sense in the univariate analysis of presenteeism were added to the model as control variables. In the second step, after excluding the effects of the above control variables, transformational leadership was negatively associated with presenteeism ($\beta = -0.090$, $p < 0.001$), where transformational leadership had a significant effect on presenteeism, explaining 11.8% of the variance. In the third step, perceived social support was negatively related to presenteeism ($\beta = -0.068$, $p < 0.05$), and adding the mediating variable perceived social support to the model explained an additional 14.0% of the variance in presenteeism. The regression coefficient for transformational leadership decreased from -0.090 in the second step to -0.069 in the third step, which was still significant. In the fourth step, occupational coping self-efficacy was negatively correlated with presenteeism ($\beta = -0.044$, $p < 0.05$), and adding career coping self-efficacy to the model explained an additional 18.7% of the unnoticeable absenteeism variance. The regression coefficient for transformational leadership decreased from -0.069 in the third step to -0.058 in the fourth but remained significant. Statistical analyses initially showed that perceived

social support and occupational coping self-efficacy mediated the relationship with presenteeism in the transformational leadership component of Chinese ICU nurses (see online supplemental table 3).

Analysis of chain mediation effects

All variables were standardised, with transformational leadership as the independent variable; presenteeism as the dependent variable; perceived social support and occupational coping self-efficacy as the mediating variables; and self-assessed physical health, perceived job stress and whether or not one has suffered from workplace violence in the past year as control variables, and mediation effects were analysed using Model six in PROCESS.

The results of the chain mediation modelling of the role of perceived social support, occupational coping self-efficacy in transformational leadership and presenteeism showed that the total effect of transformational leadership on presenteeism was -0.358 (95% CI: -0.428 to -0.287 ; $p < 0.001$). The coefficients of the indirect paths transformational leadership on perceived social support, perceived social support on occupational coping self-efficacy, transformational leadership on occupational coping self-efficacy, perceived social support on presenteeism and occupational coping self-efficacy on presenteeism were 0.468 (95% CI: 0.397 , 0.538 ; $p < 0.001$), 0.241 (95% CI: 0.160 , 0.322 ; $p < 0.001$), 0.161 (95% CI: 0.081 , 0.241 ; $p < 0.001$), -0.119 (95% CI: -0.198 to -0.039 ; $P = 0.003$) and -0.261 (95% CI: -0.339 , -0.184 ; $p < 0.001$), with an indirect effect of -0.029 (95% CI: -0.046 to -0.016 ; $p < 0.001$), and the 95% CI did not contain zero, indicating that the model of perceived social support and occupational coping self-efficacy as chain mediators was valid. See online supplemental tables 4 and 5 and figure 2.

DISCUSSION

This study explored the relationship between transformational leadership, perceived social support, occupational coping self-efficacy and presenteeism among ICU nurses. The results found a direct effect of transformational leadership on presenteeism among ICU nurses. They confirmed that perceived social support and occupational coping self-efficacy were chain mediators between transformational leadership and presenteeism. This provides a new perspective for studying the relationship between

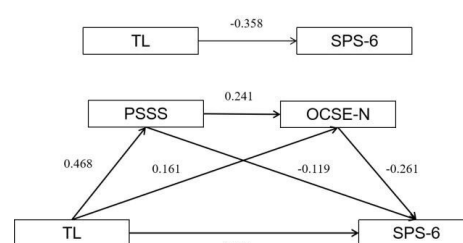


Figure 2 Schematic diagram of the chain-mediated effects of perceived social support, occupational coping self-efficacy between transformational leadership and presenteeism.

transformational leadership and presenteeism among ICU nurses.

The results of this study showed that ICU nurses' presenteeism score was (15.46 ± 4.45), of which high presenteeism accounted for 53.9%, which indicated that China's ICU nurses' presenteeism was at a high level, which was worth paying attention to. To analyse the reasons for this, (1) only 56% of ICU nurses in this study had good self-assessed health. Several studies have also confirmed that individual physical and mental health conditions are the root causes of presenteeism.^{34 35} When nurses feel unwell or suffer from chronic illnesses, they may experience an inability to concentrate and devote themselves entirely to their work, which leads to lower work efficiency, lower productivity levels and presenteeism. (2) 48% of the ICU nurses in this study had a high level of perceived stress. ICU, as an essential area for the rescue and treatment of patients with acute and critical illnesses in healthcare institutions, has a complex working environment. ICU nurses must continuously monitor changes in patients' conditions and cope with various first-aid situations. The high-intensity workload and prolonged work pressure may increase the nurses' fatigue and psychological burden, which may lead to presenteeism behaviours. (3) About 35% of ICU nurses in this study had suffered from workplace violence in the past. Workplace violence is a severe threat to the personal safety of nurses. It is a stressful event that can easily trigger anxiety and depression in nurses, negatively affect employee job satisfaction and loyalty and increase concerns about the work environment and job security, leading to an inability to concentrate on work, thus resulting in presenteeism.³⁶

The results of this study show that the transformational leadership score of ICU nurses is (104.06 ± 17.68), which is at the medium-high level, similar to the results of foreign scholars.¹⁶ In recent years, nursing managers' understanding of scientific management has gradually deepened, the leadership style of nursing team leaders has been continuously improved and managers who have received higher education have higher qualities and conduct and can play a corresponding exemplary role among nurses and can make wise decisions and guidance based on their professional knowledge when leading the team to make changes. Hence, the level of transformational leadership is higher.

The results of this study showed that ICU nurses perceived social support scores of (62.58 ± 11.92), which was at a medium-high level, similar to the findings of Lu *et al.*³⁷ Social support, as a positive emotional experience in which an individual subjectively feels that they receive understanding and support from family, society and friends, can reflect the degree to which an individual gets support in a stressful situation. Social support theory also states that a strengthened social support network helps to cope with external environmental challenges.³⁸ It may be related to the fact that the survey respondents in this study were mainly bachelor's degree holders (81.86%), and people with higher education tend to have more

knowledge and skills, as well as better communication and expression skills and are more likely to establish and maintain good social relationships. The lower level of perceived social support among those with poor health and perceived high work stress may be related to the decline in participation in social activities and lack of time and energy to maintain interpersonal social relationships among this group.

The results of this study showed that ICU nurses' occupational coping self-efficacy score was (31.13 ± 6.58), which is at the medium level (median total score of 22.5), similar to the results of the study by Pisanti *et al.*³⁹ Self-efficacy is not confidence generated for a specific domain but can predict people's behaviour in different situations. Studies have shown that individuals with high levels of self-efficacy favour using positive or problem-focused coping strategies, which help them effectively buffer the adverse effects of stress and contribute to maintaining high levels of physical and mental health.⁴⁰ It may be related to the fact that the working years of the respondents in this study were mainly 1–5 years, which accounted for about 40%. On the one hand, the ICU work environment is challenging, requiring the handling of critically ill patients and complex medical situations. Low-seniority nurses working in such a high-pressure environment may feel uneasy and anxious, which affects self-efficacy enhancement. On the other hand, newly recruited ICU nurses may lack confidence in their abilities and coping measures due to a lack of sufficient work experience and training, resulting in lower self-efficacy.

This study found that perceived social support mediates the relationship between transformational leadership and presenteeism among ICU nurses, that is, transformational leadership not only acts directly on presenteeism but also indirectly through perceived social support. According to the theory of transformational leadership, transformational leadership is an upbeat leadership style that stimulates the intrinsic motivation of employees by motivating them so that they can maximise their potential to achieve the highest level of performance, promote their personal growth and career development and thus improve team cohesion and work performance.⁴¹ On the one hand, when nurse leaders have a high transformational leadership style, they can provide the social support that nurses need. By motivating and stimulating nurses' potential, they feel valued and supported. They are willing to devote themselves to their work in a positive frame of mind, which contributes to the joint development of themselves and the organisation and enhances nurses' job satisfaction, which helps to reduce presenteeism; on the other hand, it is based on the theory of social exchange. When individuals receive sufficient support in social exchange, they are more confident and motivated to face challenges at work, thus reducing presenteeism. When nurses perceive the care and support from leaders, colleagues and organisations, this emotional support is not only conducive to regulating the negative emotions of nurses and reducing the negative impact of work pressure on

them but also helps to enhance the nurses' commitment to and identification with the organisation, so that they are more engaged in their work and reduce the possibility of presenteeism.²⁶

The results of this study found that occupational coping self-efficacy mediates the relationship between transformational leadership and presenteeism among ICU nurses, which means that transformational leadership not only acts directly on presenteeism but also indirectly through occupational coping self-efficacy. Bandura's self-efficacy theory states that when individuals believe they are competent enough to accomplish a task, they are more motivated to engage in it and strive to achieve the desired goal.⁴² Managers with a high level of transformational leadership style can motivate nurses through character appeal and vision sharing and stimulate positive emotions in nurses to show more energy, dedication and focused attitudes to be more confident in dealing with challenges and pressures at work. Nurses with higher occupational coping self-efficacy are more confident and capable of dealing with difficulties and challenges at work. They are more willing to take the initiative to solve problems, improve work performance and reduce presenteeism behaviour.

The results of this study found that perceived social support and occupational coping self-efficacy acted as chain mediators between transformational leadership and presenteeism among ICU nurses, that is, transformational leadership among nurses affects presenteeism through perceived social support and occupational coping self-efficacy. According to the JD-R model, job resources can buffer the negative consequences of presenteeism by stimulating employees' internal and external motivation to cope with demanding job tasks. Transformational leadership and perceived social support as an essential external resource and occupational coping self-efficacy as a vital internal resource, managers with a high level of transformational leadership style excel at stimulating nurses' autonomy and creativity by establishing good interpersonal relationships and a teamwork atmosphere, providing nurses with the necessary resources and support and enhancing nurses' perceptions of social support.²⁰ When nurses feel the support and encouragement from their leaders, they will be more willing to seek and use help and support from external resources, such as colleagues, family and friends. This social support helps meet nurses' needs at work, reduces work stress and fatigue and increases job satisfaction and well-being, enhancing nurses' occupational coping self-efficacy. When possessing a higher level of self-efficacy, nurses are more confident that they can better cope with the challenges and pressures at work, which is conducive to maintaining good mental health and reducing the incidence of presenteeism.

Based on the results of this study, we put forward the following recommendations to improve the status of presenteeism among ICU nurses. First, cultivate and promote a transformational leadership style: leaders

should pay attention to the needs and emotions of nurses and actively listen to their opinions and suggestions; stimulate nurses' enthusiasm and innovation through incentives and encouragement so that they can feel the meaning and value of their work; establish a positive, open and inclusive work environment and encourage nurses to participate in decision-making to improve their sense of belonging and responsibility and reduce presenteeism. Second, enhance perceived social support: establish a good social support network; organisations should encourage supportive colleague relationships and teamwork and promote interactions and exchanges through regular team-building activities; nursing managers should strengthen communication with nurses, establish a good team communication mechanism and encourage information exchange and emotional support among nurses; and provide resources for mental health support by providing resources such as psychological counselling services, guidance and training on work-life balance, to help nurses cope with work stress and emotional distress, promote nurses' physical and mental health and reduce presenteeism. Third, to improve nurses' sense of self-efficacy in occupational coping, regular training and refresher courses are conducted to improve nurses' professional skills and knowledge and enhance their ability to cope with work challenges; work tasks and resources are reasonably allocated to reduce nurses' overload and stress; and appropriate incentives and recognition mechanisms are provided to stimulate nurses' motivation and self-efficacy and to reduce presenteeism.

Limitation and prospect

First, this study only selected ICU nurses from six tertiary hospitals in Sichuan Province, China, for the survey. As a result, the representativeness of the sample size and the generalisability of the findings are limited. In the future, multi-centre and large-sample survey studies can be conducted to explore the presenteeism of ICU nurses in different regions and different levels of hospitals. Second, this study was a cross-sectional study and therefore unable to assess the longitudinal trajectory of change in transformational leadership, perceived social support, occupational coping self-efficacy and presenteeism among ICU nurses. The changes in presenteeism and related influencing factors among ICU nurses can be analysed in depth from multiple perspectives in the future through longitudinal studies.

Conclusions

In summary, China's ICU nurses' presenteeism is at a high level, and transformational leadership can not only directly affect ICU nurses' presenteeism but also indirectly affect ICU nurses' presenteeism by the chain mediating role of perceived social support and occupational coping self-efficacy. Nursing managers should pay attention to developing a transformational leadership style to enhance social support and improve ICU nurses'

occupational coping efficacy, thus reducing ICU nurses' presenteeism behaviour.

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Acknowledgements The authors thank all the participating nurses and investigators in this study for their generous contribution.

Contributors Guarantor: JW, JW, YL and QL: conceptualisation and design of the study, wrote the manuscript and analysed data. XR and XZ: contributed to the writing and revision of articles. YF, JZ, ZL and XL: contributed to the analysis and processing of data. All authors contributed to the article and approved the submitted version.

Funding This work was supported by the Sichuan Hospital Management and Development Centre (approval number: SCYG2023-31).

Competing interests None declared.

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

Patient consent for publication Not applicable.

Ethics approval This study involves human participants. This study was approved by the Deyang People's Hospital Ethics Committee (2021-04-056-K01). Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. Data are available upon reasonable request. The datasets generated during and/or analysed during this study are available from the corresponding author on reasonable request.

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REFERENCES

- Chapman LS. Presenteeism and its role in worksite health promotion. *Am J Health Promot* 2005;19.
- Kivimäki M, Head J, Ferrie JE, et al. Working while ill as a risk factor for serious coronary events: the Whitehall II study. *Am J Public Health* 2005;95:98–102.
- Webster RK, Liu R, Karimullina K, et al. A systematic review of infectious illness Presenteeism: prevalence, reasons and risk factors. *BMC Public Health* 2019;19:799.
- Mosadeghrad AM. Occupational stress and turnover intention: implications for nursing management. *Int J Health Policy Manag* 2013;1:169–76.
- McKevitt C, Morgan M, Dundas R, et al. Sickness absence and "working through" illness: a comparison of two professional groups. *J Public Health Med* 1997;19:295–300.
- Min A, Kang M, Park H. Global prevalence of presenteeism in the nursing workforce: A meta-analysis of 28 studies from 14 countries. *J Nurs Manag* 2022;30:2811–24.
- Warren CL, White-Means SI, Wicks MN, et al. Cost burden of the presenteeism health outcome: diverse workforce of nurses and pharmacists. *J Occup Environ Med* 2011;53:90–9.
- Bracewell LM, Campbell DI, Faure PR, et al. Sickness presenteeism in a New Zealand hospital. *N Z Med J* 2010;123:31–42.
- Shan G, Wang S, Wang W, et al. Presenteeism in nurses: prevalence, consequences, and causes from the perspectives of nurses and chief nurses. *Front Psychiatry* 2020;11:584040.
- Letvak SA, Ruhm CJ, Gupta SN. Nurses' presenteeism and its effects on self-reported quality of care and costs. *Am J Nurs* 2012;112:30–8; .
- Nagata T, Mori K, Ohtani M, et al. Total health-related costs due to absenteeism, presenteeism, and medical and pharmaceutical expenses in Japanese employers. *J Occup Environ Med* 2018;60:e273–80.
- Senek M, Robertson S, Ryan T, et al. The association between care left undone and temporary Nursing staff ratios in acute settings: a cross-sectional survey of registered nurses. *BMC Health Serv Res* 2020;20:637.
- Bettencourt AP, McHugh MD, Sloane DM, et al. Nurse staffing, the clinical work environment, and burn patient mortality. *J Burn Care Res* 2020;41:796–802.
- Tao QY, Ma XD, Rui X, et al. Effect of ICU nursing manpower allocation on the completion rate of cluster therapy for septic shock. *Chinese Health Quality* 2021;28:43–6.
- Chen C-Y, Chen C-HV, Li C-I. The influence of leader's spiritual values of servant leadership on employee motivational autonomy and eudaemonic well-being. *J Relig Health* 2013;52:418–38.
- Al-Thawabiya A, Singh K, Al-Lenjawi BA, et al. Leadership styles and transformational leadership skills among nurse leaders in Qatar, a cross-sectional study. *Nurs Open* 2023;10:3440–6.
- Abdul Salam H, Dumit NY, Clinton M, et al. Transformational leadership and predictors of resilience among registered nurses: a cross-sectional survey in an underserved area. *BMC Nurs* 2023;22:37.
- Wu X, Hayter M, Lee AJ, et al. Positive spiritual climate supports transformational leadership as means to reduce nursing burnout and intent to leave. *J Nurs Manag* 2020;28:804–13.
- Labrague LJ. Relationship between transformational leadership, adverse patient events, and nurse-assessed quality of care in emergency units: The mediating role of work satisfaction. *Australas Emerg Care* 2024;27:49–56.
- Labrague LJ, Obeidat AA. Transformational leadership as a mediator between work-family conflict, nurse-reported patient safety outcomes, and job engagement. *J Nurs Scholarsh* 2022;54:493–500.
- Li Y, Guo B, Wang Y, et al. Serial-multiple mediation of job burnout and fatigue in the relationship between sickness presenteeism and productivity loss in nurses: a multicenter cross-sectional study. *Front Public Health* 2021;9:812737.
- Brborović H, Daka Q, Dakaj K, et al. Antecedents and associations of sickness presenteeism and sickness absenteeism in nurses: A systematic review. *Int J Nurs Pract* 2017;23.
- Fiorini LA, Houdmont J, Griffiths A. Nurses' illness perceptions during presenteeism and absenteeism. *Occup Med (Lond)* 2020;70:101–6.
- Rainbow JG, Drake DA, Steege LM. Nurse health, work environment, presenteeism and patient safety. *West J Nurs Res* 2020;42:332–9.
- Miloseva L, Vukosavljevic-Gvozden T, Richter K, et al. Perceived social support as a moderator between negative life events and depression in adolescence: implications for prediction and targeted prevention. *EPMA J* 2017;8:237–45.
- Yang T, Ma T, Liu P, et al. Perceived social support and presenteeism among healthcare workers in China: the mediating role of organizational commitment. *Environ Health Prev Med* 2019;24:55.
- Liu XL, Jia P, Wen XX. Current status and influencing factors of hidden absence of ICU nurses in China. *J Nur* 2022;29:1–5.
- Demerouti E, Bakker AB, Nachreiner F, et al. The job demands-resources model of burnout. *J Appl Psychol* 2001;86:499–512.
- Ni P, Chen JP, Liu N. The sample size estimation in quantitative nursing research. *Chin J* 2010;45:378–80.
- Li CP, Shi K. The structure and measurement of transformational leadership in China. *Acta Psychol (Amst)* 2005;97:97–105.
- Blumenthal JA, Burg MM, Barefoot J, et al. Social support, type A behavior, and coronary artery disease. *Psychosom Med* 1987;49:331–40.
- Pisanti R, Lombardo C, Lucidi F, et al. Development and validation of a brief occupational coping self-efficacy questionnaire for nurses. *J Adv Nurs* 2008;62:238–47.
- Koopman C, Pelletier KR, Murray JF, et al. Stanford presenteeism scale: health status and employee productivity. *J Occup Environ Med* 2002;44:14–20.

- 34 Whysall Z, Bowden J, Hewitt M. Sickness presenteeism: measurement and management challenges. *Ergonomics* 2018;61:341–54.
- 35 Shan G, Wang W, Wang S, *et al.* Authoritarian leadership and nurse presenteeism: the role of workload and leader identification. *BMC Nurs* 2022;21:337.
- 36 Yang T, Shen Y-M, Zhu M, *et al.* Effects of co-worker and supervisor support on job stress and presenteeism in an aging workforce: a structural equation modelling approach. *Int J Environ Res Public Health* 2015;13:72.
- 37 Lu J, Wang B, Dou X, *et al.* Moderating effects of perceived social support on self-efficacy and psychological well-being of Chinese nurses: a cross-sectional study. *Front Public Health* 2023;11:1207723.
- 38 Uchino BN. Social support and health: a review of physiological processes potentially underlying links to disease outcomes. *J Behav Med* 2006;29:377–87.
- 39 Pisanti R, van der Doef M, Maes S, *et al.* Occupational coping self-efficacy explains distress and well-being in nurses beyond psychosocial job characteristics. *Front Psychol* 2015;6:1143.
- 40 Jex SM, Bliese PD, Buzzell S, *et al.* The impact of self-efficacy on stressor-strain relations: coping style as an explanatory mechanism. *J Appl Psychol* 2001;86:401–9.
- 41 Abd-El Aliem SMF, Abou Hashish EA. The relationship between transformational leadership practices of first-line nurse managers and nurses' organizational resilience and job involvement: a structural equation model. *Worldviews Evid Based Nurs* 2021;18:273–82.
- 42 Bandura A. Self-efficacy: toward a unifying theory of behavioral change. *Psychol Rev* 1977;84:191–215.