

The Relationship Between Occupational Stress, Job Burnout and Quality of Life among Surgical nurses in Xinjiang, China

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Research article

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Abstract

Background: Nursing is a high-risk occupation that involves exposure to stress. The physical and mental health of nurses is directly related to the quality of medical services, so the quality of life of nurses cannot be ignored.

Methods: This study adopted the cluster random sampling method and carried out a questionnaire survey among 488 surgical nurses from five affiliated hospitals of Xinjiang medical university from May 2019 to September 2019. The study analyzed the relationship between occupational stress, job burnout and quality of life. The Effort-Reward Imbalance questionnaire(ERI), Maslach Burnout Inventory General Survey(MBI-GS), and the 36-item Short Form Health Survey(SF-36) were used to evaluate occupational stress, job burnout and quality of life among surgical nurses.

Results The results revealed that the quality of life score among surgical nurses was not high, and differences were observed in the quality of life score of patients according to gender, age, title, and frequency of night shifts ($P < 0.05$). Occupational stress and job burnout are risk factors for quality of life, and the interaction between high stress and high burnout seriously reduces quality of life. The structural equation model revealed that occupational stress and job burnout have a direct impact on life quality, occupational stress has a direct impact on job burnout, and job burnout is the mediating factor of occupational stress on life quality.

Conclusion Occupational stress and job burnout affect quality of life, and their interaction also affects quality of life. Higher levels of stress and burnout were associated with lower quality of life scores.

Background

The medical workload is heavy, the working hours are long, and the nursing profession is associated with a high degree of pressure and high risk. Chronic and excessive stress can pose serious threats to physical and mental health[1]. Stress not only affects the physical and mental health of medical staff, but also affects their work quality and efficiency, as well as their love and passion for their work[2]. As a special professional group, nurses shoulder the important task of saving lives and promoting health. Their working status and working ability can have a direct impact on the lives and safety of patients[3]. Therefore, while paying attention to the health of patients, the health of nurses should also be highly valued. Research shows that the nursing profession is highly pressurized, the work is intense, and nurses are part the group that is typically at risk of occupational illness and ill health[4].Nurses suffer from severe occupational stress and job burnout[5].

Occupational stress refers to the physiological and psychological pressure caused by an imbalance between objective requirements and the adaptability of individuals in the process of work, which is a kind of non-specific abnormal psychological reaction[6]. Nurses are engaged in the treatment and care of patients for a long period of time, and at the same time, they often have to face patients who are seriously ill. The nature of the profession requires nurses to maintain a state of high mental

concentration while working in order to avoid errors during their work. Therefore, nursing work is relatively stressful and the tension is particularly obvious[7]. Occupational stress has gradually become a professional hazard that seriously threatens the physical and mental health of nursing staff and directly affects the occupational enthusiasm of nurses[8]. According to the National Institute for Occupational Safety and Health Research[9], occupational stress factors among nurses include heavy workloads, time-related pressure, lack of social support, exposure to infectious diseases, needle stick injuries, exposure to work that is related to violence or threats, role conflicts, lack of sleep, lack of human resources, and the treatment of patients with complexes. Studies have found that excessive occupational stress may cause hypertension, cardiovascular diseases, digestive system diseases, and joint and muscle diseases, among others, which seriously affect the work efficiency and attendance rate of nursing staff, leading to a lack of human resources[10]. Carvalho et al.[11] showed that among the patients who attended the outpatient service for physical and mental diseases due to occupational stress, medical staff comprised one of the largest groups. Domestic studies have also found that the level of occupational stress among nurses is higher than that among employees in factories, organs, services, business and primary and secondary school teachers[12]. Liu Wei et al.[13] analyzed occupational stress among nursing staff at a Grade III Level hospital in Xinjiang, and the results showed that the proportion of low occupational stress was 6.1%, the proportion of medium occupational stress was 47.1%, and the proportion of high occupational stress was 46.8%, all of which were higher than the national standard. Occupational stress is one of the major risk factors affecting the physical and mental health of nurses, which has a serious impact on the quality of life of nurses[14]. Studies have shown that the long-term alleviation of tension is problematic, and as tension accumulates, nurses will suffer from job burnout[15].

Job burnout refers to the physical, emotional and psychological states of the individual that lead to work-related stress reactions, and mainly manifest in the form of emotional exhaustion, depersonalization and diminished personal accomplishment[16]. The nursing profession is associated with a high incidence of job burnout[17]. It is reported that about 15% of medical staff are in a state of subhealth, and about 40% of medical staff have a long-term sense of job burnout[18]. Some studies have shown that non-burnout nursing staff are significantly less likely to make errors at work than burnout nursing staff, and burnout directly affects the quality of nursing services[19]. Studies have shown that the professional characteristics of the nursing profession are such that nurses are faced with many stressors, and this type of high-stress working environment is likely to lead to job burnout among nursing staff[20, 21]. A survey on job stressors and job burnout among nurses showed that 59.1% of nurses have a high level of burnout, and there is a significant correlation between job stressors and job burnout[22]. According to the study, the existence of occupational stress may not necessarily lead to job burnout among nurses, but if stress is experienced over a long period of time and cannot be alleviated effectively, it will lead to job burnout and will further affect quality of life[23].

With the change in the disease spectrum and the improvement in the medical advancement, nursing staff face increasing demands. Those who receive surgical nursing services primarily include surgical patients who require highly professional and technically competent nurses, which, in comparison to internal medicine nurses, means that surgical nurses exercise greater patience and caring in their daily work[24].

Occupational stress and job burnout can affect physical and mental health, and reduce the quality of life of occupational groups[25]. Nursing staff should confront the pressures that arise from their work, life, professional title, technical level, and from other factors. Therefore, it is necessary to effectively reduce the level of tension and burnout among nurses and to improve their quality of life so that they can carry out their work with a better attitude and provide a higher quality service for patients. Previous studies largely focused on the correlation between occupational stress and job burnout, or simply analyzed the relationship between occupational stress and quality of life, while few studies have analyzed the relationship between quality of life, occupational stress and job burnout by employing measurement tools. Therefore, this study investigated the level of occupational stress, job burnout and quality of life among surgical nurses from five large general hospitals in Xinjiang, and analyzed the impact of occupational stress and job burnout on the quality of life of nurses. In addition, a further analysis of the relationship between these three factors was facilitated by developing a structural equation model.

Methods

Study population

This study was conducted in five affiliated hospitals of Xinjiang medical university, China (i.e., the first affiliated hospital, the third affiliated hospital, the fourth affiliated hospital, the fifth affiliated hospital and the sixth affiliated hospital). Consent was obtained after communication with each hospital prior to the investigation. The survey was carried out from May 2019 to September 2019. All surgical nurses from the five affiliated hospitals were investigated in this study. Surgery mainly included cardiothoracic surgery, neurosurgery, hepatobiliary surgery, urology surgery, anorectal surgery, burn surgery, breast surgery, pediatric surgery, plastic surgery, orthopedics, and hand surgery, which amounted to a total of 11 departments, and each department employed an average of 10–15 nurses. Using the cluster random sampling method, 10 nurses were randomly selected from each department for investigation. A list of personnel from each department was obtained from the chief nurse of each department, and according to the list, the research objects were randomly selected. The inclusion criteria consisted in the following: (1) age: 18–60; (2) continuous working time \geq 0.5 years; and (3) registered nurse of clinical practice. A total of 550 questionnaires were distributed, and 532 questionnaires were retrieved. Thereafter, 488 valid questionnaires were finally retrieved, with an effective recovery rate of 88.73%. The research design was approved by the ethics committee of Xinjiang medical university, and all respondents provided their voluntary written informed consent before the investigation.

Research methods

A questionnaire (detailed below) was used to investigate the status of occupational stress, job burnout and quality of life.

General investigation

This section discusses general demographic characteristics such as sex, age, working years, educational level, marital status, professional title, night shift frequency, smoking and drinking.

Occupational stress investigation

The Effort - Reward Imbalance questionnaire (ERI) was used to evaluate the level of occupational stress among the participants in this study. This questionnaire was formulated by German Siegrist in 1996[26,27]. It was developed under the model of imbalance between pay and remuneration, and consisted of three parts: effort, reward (including salary, respect, career stability and promotion prospect) and internal input, and consists in a total of 23 items. The Chinese version of the ERI scale was introduced by the domestic scholar Li Jian in 2004. The reliability and validity of the Chinese version of the ERI scale were tested with the staff from Zhengzhou hospital in China, as a sample cohort. After data analysis, the results showed that the alpha coefficient of the effort scale was 0.78, the alpha coefficient of the reward scale was 0.81, and the alpha coefficient of the internal input scale was 0.74, which showed good reliability[28]. Li Xiuyang et al[29]. also believe that the Chinese version of the ERI scale has better reliability and validity in China. The first six items in the ERI scale measure "effort", the middle 11 items measure "reward", and the last six items measure "internal input". The calculation formula of the ERI ratio was as follows: The score for "effort" / (score for "reward" × C), where C is the ratio of the number of "effort" items to the number of "reward" items, i.e., 6/11. If the ERI ratio was > 1, it was considered to be the winner with high effort and low reward (i.e., high occupational stress); if the ERI ratio was ≤ 1, it was the winner without high effort and low reward i.e., low occupational stress[30].

Job burnout investigation

The Chinese Maslach Burnout Inventory General Survey (MBI-GS) was used to measure the burnout level among the respondents in this study. The MBI-GS was revised by Maslach and Jackson in 1996 on the basis of the original MBI scale[31]. The Chinese version of the MBI-GS was translated and revised by domestic scholars, Li Yongxin et al., according to domestic language and cultural habits[32,33]. Li Fuye et al. showed that the reliability, validity and other measurement indicators of the questionnaire were good and satisfied the requirements of psychological measurement[34,35]. The Chinese version of the MBI-GS includes three factors, namely, "emotional exhaustion", "depersonalization" and "lower personal satisfaction", and consists in a total of 15 entries, i.e., five items for "emotional exhaustion", four items for "depersonalization" and six items for "lower personal satisfaction". The questionnaire was scored according to seven levels which ranged from 1–7, with "1" representing "completely consistent" and "7" representing "completely inconsistent". The study referred to the grading standard of Ye Zhihong et al[36]. on the critical value of job burnout (exhaustion score ≥ 25, depersonalization score ≥ 11, and lower personal satisfaction score ≥ 16) among nurses. The method Li Yongxin[33] was used to classify job

burnout into four levels: Zero burnout (respondents scored below the critical value on three factors of the MBI-BS); mild burnout (respondents scored at or above a critical value on one factor of the MBI-GS); moderate burnout (the respondents' scores on two factors of the MBI-GS were equal to or above the critical value); and high burnout (the respondents' scores on three factors of the MBI-GS were equal to or above the critical value).

Quality of life investigation

The Chinese version of the 36-item Short Form Health Survey (SF-36) was adopted[37,38]. The Chinese version of sf-36 was translated and revised repeatedly by domestic scholars such as Li Lu[39], and its performance was tested. The study found that the alpha coefficients of the eight subscales in the Chinese version ranged from 0.78 (general health perceptions) to 0.94 (physical function), reflecting the acceptable internal stability of the Chinese version and suggesting that the Chinese version of SF-36 had good reliability and validity[40]. The scale included 36 items, divided into eight dimensions consisting in physical functioning (PF), role limitations due to physical health (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitations due to emotional problems (RE), mental health (MH), where each dimension includes several problems. Among them, the first four dimensions were divided into physiological health, and those that followed were classified into four dimensions of psychological health. The conversion formula for the score of each dimension is: the conversion score = (actual score - the lowest possible score of this dimension)/(the highest possible score of this dimension - the lowest possible score of this dimension) ×100, the score of each dimension was 0–100 points. The mean of the sum of the scores of the eight dimensions was taken as the comprehensive score. The higher the score, the less the level of harm and the better the quality of life[37].

Quality Control

Before a formal investigation, a trial investigation should be organized to further modify and improve the questionnaire and accumulate experience in field investigation and organization. Make the investigator familiar with the investigation content through the preliminary investigation, and ensure that the investigated personnel can fill in the questionnaire accurately and completely. Survey implementation stage: The questionnaire was distributed to the nurses who participated in the survey by the trained investigator. The purpose and content of the study were explained to the participants, and the questionnaire was filled out with on-site guidance. The participants will be filled in anonymously to ensure that the questionnaire is only used for this study and to protect the participant privacy. Data recovery and entry: The collected questionnaires were reviewed, and questionnaires which failed to comply with the inclusion requirements were excluded. Questionnaires for which greater than 5% of items were missing were also excluded. The remaining completed questionnaires were coded and sorted, and the questionnaire results were entered into the database in pairs to ensure the accuracy of the data.

Statistical methods

SPSS for Windows v.22.0 software (SPSS Inc., Chicago, IL, USA) was used for data processing and statistical analysis. All measurement data were used for statistical description. The comparison between the two groups of means was conducted with the *t*-test of two independent samples. The comparison between the three groups and the means of more than three groups was conducted with one-way analysis of variance. Correlation analysis: Pearson correlation was used to analyze the correlation between occupational stress and job burnout of surgical nurses. Multivariate analysis: multiple linear regression analysis was used to analyze the impact of occupational stress and job burnout on the quality of life of surgical nurses, and the interaction between occupational stress and job burnout on the quality of life. The relationship between occupational stress, job burnout and quality of life of surgical nurses was analyzed by Amos 22.0 software, and the optimal structural equation model was fitted. The significance level was $\alpha = 0.05$.

Results

Quality of life score of surgical nurses under different population characteristics

Male nurses had higher life quality scores than female nurses ($P = 0.023$); The nurses aged 29–28 had the lowest quality of life score, and the nurses over 39 had the highest quality of life score ($P < 0.001$); The quality of life scores of nurses with different professional titles were different ($P < 0.001$); The total score of life quality of night shift frequency (> 3 times/month) was lower than that of night shift frequency ≤ 3 times/month ($P < 0.001$); There was no statistical difference in the total score of the quality of life of nurses in comparison with other population characteristics ($P > 0.05$). Table 1

Table 1

Comparison of quality of life scores under different population characteristics ($\bar{x} \pm S$)

Variables		N	Total score of quality of life	F	P
Sex	Male	20	73.99 ± 11.94	5.216	0.023
	Female	468	69.14 ± 9.19		
Age group, years	<29	249	70.47 ± 9.02	14.393	<0.001
	29 ~ 38	195	66.88 ± 9.30		
	>39	44	73.85 ± 8.77		
Ethnicity	Han	329	69.53 ± 9.42	0.393	0.531
	Minority	159	68.96 ± 9.24		
Working years	<5	203	69.54 ± 9.59	0.766	0.466
	5–10	189	68.73 ± 9.16		
	>10	96	70.11 ± 9.26		
Educational level	Below bachelor's degree	345	69.18 ± 9.91	0.324	0.569
	Bachelor degree or above	143	69.72 ± 9.49		
Professional titles	primary	406	68.59 ± 9.42	8.835	< 0.001
	intermediate	72	72.61 ± 7.81		
	advanced	10	76.41 ± 9.76		
Marital status	Single	302	69.19 ± 9.01	0.216	0.642
	Married	186	69.59 ± 9.92		
Night shift frequency	> 3 times/month	355	68.17 ± 9.34	21.332	< 0.001
	≤ 3 times/month	133	72.47 ± 8.69		
Smoking	Yes	9	71.17 ± 14.97	0.349	0.555
	No	479	69.31 ± 9.24		
Drinking	Yes	33	68.86 ± 9.36	0.095	0.759
	No	455	69.38 ± 9.36		

Relationship Between Occupational Stress And Quality Of Life

There were 82 ERI \leq 1 (low-stress group) and 406 ERI $>$ 1 (high-stress group). The total score of life quality of nurses in the high-stress group was lower than that in the low-stress group ($t = 2.749$, $P = 0.006$). Table 2

Table 2

Comparison of quality of life scores under different stress levels ($\bar{x} \pm s$)

Grouping	N	Total score of quality of life	t	P
ERI \leq 1 (Low-stress group)	82	71.91 \pm 9.47	2.749	0.006
ERI $>$ 1 (High-stress group)	406	68.82 \pm 9.26		

The Relationship Between Job Burnout And Quality Of Life

Among the four burnout levels, which included zero, light, medium and high, the total score of life quality was the highest in the zero-burnout group and the lowest in the high-burnout group, and the difference was statistically significant ($P < 0.001$) (Table 3).

Table 3

Comparison of quality of life scores under different burnout levels ($\bar{x} \pm s$)

Grouping	N	Total score of quality of life	F	P
Zero-burnout group	27	73.71 \pm 8.82	26.767	< 0.001
Light-burnout group	117	71.34 \pm 9.08		
Medium-burnout group	227	69.74 \pm 8.63		
High-burnout group	117	63.73 \pm 8.60		

Correlation analysis of occupational stress and job burnout of surgical nurses

The correlation between occupational stress and job burnout of surgical nurses was found: There was no statistically significant difference between effort and depersonalization, or between internal input and depersonalization ($P > 0.05$). All other dimensions were correlated with each other ($P < 0.05$ or $P < 0.01$). Among them, the lower personal satisfaction was negatively correlated with effort and reward, while the other dimensions were positively correlated (Table 4).

Table 4
Pearson correlation analysis of occupational stress and job burnout in surgical nurses

Variables	Emotional exhaustion	Depersonalization	Lower personal satisfaction	Job burnout score
Effort	0.522**	0.028	-0.309**	0.391**
Reward	0.354**	0.163**	-0.356**	0.396**
Internal input	0.487**	0.034	0.286**	0.368**

Note: * $P < 0.05$; ** $P < 0.01$

Multivariate Analysis Of Quality Of Life Related Influencing Factors

With the total score of quality of life as the dependent variable, sex, age, professional titles, frequency of night shift, ERI ratio and its three dimensions (effort, reward and internal input), total score of job burnout and its three dimensions (emotional exhaustion, depersonalization and lower personal satisfaction) were used as independent variables for multiple stepwise linear regression analysis. The results showed that the main factors influencing the quality of life were age, professional title, night shift frequency, lower personal satisfaction, ERI ratio, lower personal satisfaction and job burnout (Table 5).

Table 5
Multiple linear regression analysis of factors influencing the quality of life of surgical nurses

Variables	β	S.E.	β'	t	P
Constant	82.633	3.202	-	25.809	<0.001
Age	-1.963	0.656	-0.137	-2.993	0.003
Professional titles	3.897	0.959	0.184	4.064	<0.001
Night shift frequency	2.826	0.84	0.135	3.365	0.001
Internal input	-0.315	0.104	-0.131	-3.038	0.003
ERI ratio	-4.883	1.359	-0.145	-3.593	<0.001
Lower personal satisfaction	-0.606	0.083	-0.401	7.326	<0.001
Job burnout	-0.332	0.036	-0.523	-9.111	<0.001

Effects of the interaction of occupational stress and job burnout on surgical nurse quality of life

To further analyze the impact of the interaction between occupational stress and job burnout on the quality of life, the pairwise interaction of stress and burnout with quality of life were analyzed by multiple stepwise linear regression. The results showed that the interaction between stress and burnout had an effect on the quality of life ($P < 0.001$), and high stress * high burnout had the greatest effect on the quality of life (Table 6).

Table 6
Correlation analysis between occupational stress and job burnout in surgical nurses and their quality of life

Variables	β	S.E.	β'	t	P
Constant	72.797	0.648	-	112.364	<0.001
Low stress * Light burnout	-8.289	2.977	-0.119	-2.785	<0.001
High stress * Medium burnout	-3.296	0.905	-0.172	-3.604	<0.001
High stress * High burnout	-9.133	1.060	-0.406	-8.618	<0.001
Note: * representational interaction					

The structural equation model of occupational stress - job burnout - quality of life

AMOS 22.0 software was used for to conduct the maximum likelihood estimation test, and the following model was selected according to the principles of accuracy and conciseness through continuous modification of the model. Among all of the models, the overall fitting effect of the model was the closest to the reference standard ($\chi^2/df < 3.0$, RMSEA < 0.08, AGFI > 0.9, GFI > 0.9), with good fitting ($\chi^2/df = 1.803$, RMSEA = 0.041, AGFI = 0.946, GFI = 0.962), and the model had statistical significance ($P < 0.001$).

As can be seen from the figure: (1) The direct effect of occupational stress (ERI) on job burnout was 0.59 ($P < 0.001$), indicating that the higher the level of occupational stress, the greater the severity of job burnout; (2) The direct effect of occupational stress (ERI) on quality of life was - 0.16 ($P = 0.026$), indicating that the higher the level of occupational stress, the worse the quality of life; (3) The direct effect of job burnout on quality of life was - 0.26 ($P < 0.001$), indicating that the greater the severity of job burnout, the worse the quality of life; (4) An indirect effect was observed between occupational stress and quality of life, and job burnout was the mediating variable of the interaction between these factors. The mediating effect was: $0.59 \times - 0.26 = - 0.153$. Figure 1

Discussion

Research in recent years has shown that healthcare jobs are highly stressful, the work environment is poor, and work overload, work responsibilities, work relationships, and the occupational experience all

contribute to occupational tension[41]. Psychological problems have become an increasingly obvious social problem among medical workers. Nurses often face heavy workloads, long working hours and carry out frequent shift work, so it is understandable that these factors cause tension, burnout, anxiety, depression and other negative emotions, in addition to physical fatigue, which further results in a decline in working ability and quality of life.

The study found that male nurses had higher life quality scores than female nurses, which may be because men are superior to women in terms of physical strength and energy, and can withstand greater pressure. When confronted with the heavy demands of nursing work, they can better adapt to high-intensity nursing work than women. This is consistent with the research results of Thakre et al[42]. Nurses aged 29 to 38 had the lowest quality of life scores. This can be explained by how nurses in this age group are independent in life and have just started their career. Their professional title is lower and their income is lower. They need to take on both family and work responsibilities. The total score of quality of life among nurses over 39 years old was the highest. It may be that as nursing staff get older, their professional experience increases, their income increases, their family life tends to be stable, their children are basically capable of living independently, their daily life does not require too much care, and the individual has a strong ability to cope with the various risks associated with their work. Nurses in this age group often hold important positions in their work, and they can experience a greater feeling of victory and satisfaction, so the total score of quality of life was higher. However, most nurses aged 18 to 28 have short working hours after they graduate, and most of them have not yet lived independently. Although they have heavy workloads, they rely on the help of their families in life and spirit, which reduces part of the work pressure. Hsu et al[43]. reported that gender, age, marital status, education level and other demographic characteristics affect the quality of nurses' professional lives, which is an important predictor of the quality of life of nurses. The higher the title, the higher the total score of quality of life, which is consistent with the research results of Xu Zhenhai[44]. Studies show that higher positions tend to permit greater room for development, are associated with a higher degree of freedom from authority, and various needs are easier to satisfy[45]. Senior nurses have more advanced qualifications, mature skills, and rich experience, which enable them to cope with the pressures of their work more easily. As the frequency of night shifts increases, the quality of life score of nurses decreases, which may be because night shifts affect the body's normal ability to rest and sleep, and frequent night shifts disrupt the body's biological rhythm, so that it cannot effectively recover from fatigue by getting sufficient rest, thus reducing the quality of life[46].

Among the 488 respondents who participated in this study, 82 nurses showed low stress and 406 nurses showed high levels of stress. The quality of life score among nurses in the low stress group was higher. Studies have shown that long-term occupational stress can lead to a decline in occupational quality of life, which may be caused by psychological stress, and then affects work[47]. Some studies have confirmed that occupational stress among medical staff can not only cause a decline in the individual's quality of life, but can also lead to a reduction in the standard of medical services provided, and contribute to an increase in occupational risk and the loss of medical staff, thus causing a serious economic burden to society[48]. Compared with the zero, low, medium and high burnout groups, the

quality of life score decreased as the severity of burnout increased. Scott et al[49]. believed that job burnout can seriously affect one's physical and mental health, work, and organization. Job burnout is closely related to work efficiency. The higher the severity of job burnout, the lower the level of work efficiency, the greater the likelihood of absenteeism and job-hopping. Job burnout is one of the possible occupational health problems of among nurses. An increasing number of studies have proved that nursing is associated with a high incidence of job burnout[50, 51]. There is a correlation between each dimension of occupational tension and each dimension of job burnout, which indicates that tension and burnout also affect each other. Domestic and foreign studies suggest that there is a correlation between occupational stress, job burnout and employee health, and occupational stress can cause job burnout. Burnout mainly manifests in the form of fatigue, anxiety, depression, reduced work efficiency, and even physical and mental exhaustion. It is a typical mental health problem caused by long-term occupational stress[52, 53]. Fan Li et al.[54] proposed that occupational tension is the most direct cause of an individual's burnout, which is the most direct result of occupational stress. A large number of studies have found that occupational stress and job burnout can affect physical and mental health, and reduce the quality of professional life among employees[55]. If an individual cannot effectively cope with the occupational stress in the workplace, long-term burnout will result, leading to higher stress levels[56].

By carrying out a multiple stepwise linear regression analysis of the factors affecting quality of life, it was found that in addition to the characteristics of age, professional titles and frequency of night shifts, internal input, the ERI ratio, lower personal satisfaction and job burnout also affected the quality of life of nurses. The interaction between stress levels and the burnout level was further analyzed to determine the impact on quality of life. The results showed that the interaction between occupational stress and job burnout affects quality of life. By constructing the structural equation model of occupational stress, job burnout and quality of life, the internal relationship between variables was also confirmed. Both occupational stress and job burnout have a strong impact on quality of life. At the same time, job burnout has a mediating effect on occupational stress and quality of life. Hu Huihui[57], a domestic scholar, carried out an analysis of the professional life quality of general surgery nurses, and the results revealed an imbalance between effort and return, which was regarded as the most critical factor affecting their professional life quality. There is a correlation between occupational stress and job burnout and employee health, among which emotional exhaustion has a particularly significant impact on physical and mental health. Job burnout also has a negative impact on an individual's physical and mental health, and different occupational stress factors may lead to different health problems, and a reduced quality of life[58]. Hetzel et al.[59]believed that higher levels of stress are associated with a greater likelihood of negative emotional experience and adverse effects on mental health. Excessive stress levels are likely to lead to job burnout, which thus affects health.

Conclusion

This study explored the relationship between occupational stress, job burnout and life quality, and further analyzed the causal relationship among these factors by developing a structural equation model. This study found that the total life quality score of surgical nurses varied in respect to sex, age, job title and

night shift frequency. Higher levels of stress and burnout were associated with lower quality of life scores. The results of multi-factor analysis also showed that occupational stress and job burnout affect quality of life, and their interaction also affects quality of life. By developing the structural equation model, the causal relationship between occupational stress, job burnout and quality of life was further clarified. Therefore, an objective evaluation of stress and burnout can be used as a predictor of quality of life.

Declarations

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Authors' contributions

X.L., T.J., J.S. and J.L. conceived and designed the study; X.L., T.J., J.S. and J.L. contributed to the acquisition, analysis and interpretation of data; X.L., T.J., J.S. and L.S. were involved in drafting the manuscript and revising it for important intellectual content. All authors reviewed and approved the final manuscript.

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Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

The study was approved by the ethics committee of Xinjiang Medical University [No.2015006]. . Written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Figures

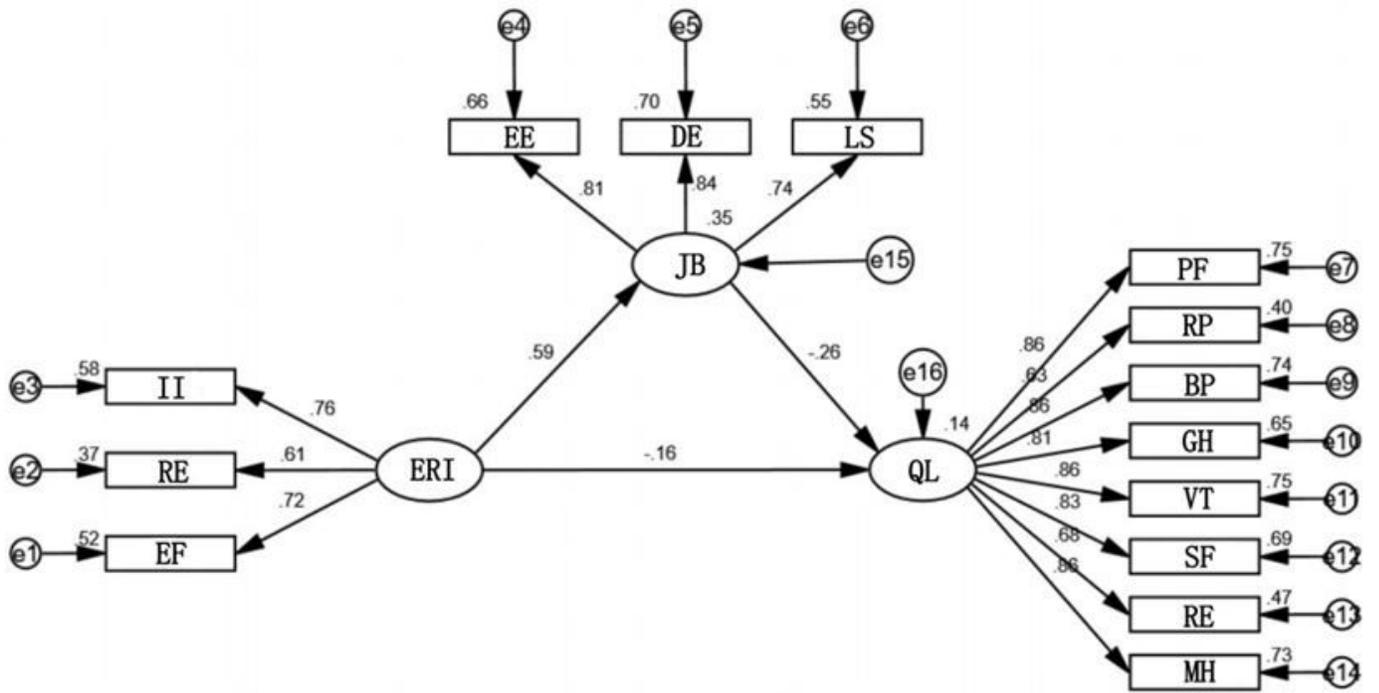


Figure 1

Structural equation model of occupational stress - job burnout - quality of life Note: II=Internal input ; RE=Reward ; EF=Effort ; JB=Job burnout ; EE=Emotional exhaustion ; DE=Depersonalization ; LS=Lower personal satisfaction ; QL=Quality of life ; PF=Physical functioning ; RP=Role limitations due to physical health ; BP=Bodily pain ; GH=General health perceptions ; VT=Vitality ; SF=Social functioning ; RE=Role limitations due to emotional problems ; MH=Mental health ;