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The Effect of Job Stress on Job Burnout of Operating Room Nurses in Primary Hospitals: The Mediating Role of Self-efficacy

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Abstract: ***Objective:*** *To explore the current situation of job stress, self-efficacy and job burnout of operating room nurses in primary hospitals, analyze the influence mechanism of job stress on job burnout, and focus on verifying the mediating role of self-efficacy in it, so as to provide theoretical basis for nursing managers in primary hospitals to formulate targeted interventions and reduce the level of job burnout of nurses.* ***Methods:*** *A total of 120 operating room nurses from 6 secondary primary hospitals in Baise City were selected as the research objects by convenient sampling method. A questionnaire survey was conducted using the General Information Questionnaire, the Chinese Nurse Job Stressor Scale, the General Self-Efficacy Scale, and the Masler Burnout Inventory. SPSS 26.0 software was used for statistical description, t test, analysis of variance, Pearson correlation analysis, multiple linear regression analysis and Bootstrap method to test the mediating effect.* ***Results:*** *The total score of working pressure of operating room nurses in primary hospitals was (85.42 ± 12.36), which was above the middle level. The total score of self-efficacy was (22.15 ± 5.48), which was at a medium level. The total score of job burnout was (68.93 ± 15.27), and the score of emotional exhaustion was higher. There was a significant positive correlation between work stress and job burnout ($r = 0.612$, $P < 0.01$). There was a significant negative correlation between work stress and self-efficacy ($r = -0.485$, $P < 0.01$). There was a significant negative correlation between self-efficacy and job burnout ($r = -0.534$, $P < 0.01$). Multiple regression analysis showed that job stress could still significantly positively predict job burnout ($\beta = 0.542$, $P < 0.01$) after controlling demographic variables such as educational background, professional title and working years. The results of Bootstrap test showed that the mediating effect of self-efficacy between job stress and job burnout was significant, and the mediating effect value was 0.156, accounting for 24.8 % of the total effect value.* ***Conclusion:*** *The operating room nurses in primary hospitals generally have high work pressure and job burnout, and their self-efficacy is at a medium level. Job stress not only directly affects job burnout, but also indirectly aggravates job burnout by reducing self-efficacy. Nursing managers should pay attention to the psychological status of operating room nurses, improve their self-efficacy through professional training and psychological counseling, so as to block the transmission path of work pressure to job burnout and stabilize the primary care team.*

Keywords: Primary hospital, Operating room nurses, Working pressure, Job burnout, Self-efficacy, Mediating role.

1. Introduction

As the core place of hospital emergency and critical care, operating room has the characteristics of high technical requirements, fast pace of work, high risk, and many emergencies. It is recognized as one of the departments with the highest pressure in the hospital. Compared with tertiary hospitals, the operating rooms in primary hospitals are faced with practical difficulties such as relatively insufficient human resources, lagging equipment updates, and fewer opportunities for further study. Nurses are prone to physical and mental fatigue under long-term high-intensity and high-load operation. Job burnout refers to a comprehensive symptom characterized by emotional exhaustion, depersonalization tendency and reduced personal accomplishment caused by long-term chronic stress in the occupational environment [1]. Studies have shown that job burnout not only seriously affects the physical and mental health and work enthusiasm of nurses, but also may lead to a decline in the quality of care, an increase in the incidence of errors and accidents, and even a wave of nurse turnover. [2] This is undoubtedly worse for primary hospitals that are already short of talents. Job stress is the most important antecedent variable leading to job burnout, which has been widely recognized by the academic community. According to Bandura's social cognitive theory, self-efficacy, as an individual's belief in their ability to perform specific behaviors and achieve expected results, plays a key regulatory role in coping with stressful environments. Individuals with high self-efficacy tend to regard stress situations as challenges rather than threats, and can mobilize more cognitive resources to cope with difficulties, thus reducing the occurrence of burnout. On the contrary, people with low self-efficacy are prone to feel powerless in the face of pressure and accelerate the formation of burnout [3-4]. At present, the research on nurses' job stress and job burnout is mostly concentrated in large general hospitals. [5-6] There are relatively few studies on the specific group of operating room nurses in primary hospitals, and few studies have explored the mediating mechanism of self-efficacy. In view of this, the purpose of this study is to investigate the current situation of job stress, self-efficacy and job burnout of operating room nurses in primary hospitals, and to construct a path model to verify the mediating role of self-efficacy, in order to provide a new management perspective for nursing managers in primary hospitals, to alleviate job burnout by improving nurses' self-efficacy, and to ensure the safety and quality of operating room nursing.

2. Research Object and Method

2.1 Research Object

From June 2024 to June 2025, the operating room nurses of 6 second-class general hospitals in Baise City were selected as the research objects by convenient sampling method. Inclusion criteria: (1) holding a nurse qualification certificate and registering; (2) in the operating room engaged in clinical nursing work experience ≥ 1 year; (3) Informed consent and voluntary participation in this study. Exclusion criteria: (1)

training, practice nurses; (2) those who were not on duty during the investigation due to sick leave, maternity leave, etc.; (3) As the head nurse and other administrative positions.

2.2 Research Tools

2.2.1 General Information Questionnaire

Self-designed by the researchers, including gender, age, education, job title, operating room working years, employment methods, the average number of night shifts, the average number of daily operations and so on.

2.2.2 Chinese Nurse Job Stressor Scale

The scale was revised by Li Xiaomei et al. [7], including 5 dimensions of nursing profession and work, workload and time allocation, working environment and resources, patient care, management and interpersonal relationship, with a total of 35 items. The Likert 4-level scoring method was used to assign 1-4 points from 'very disagree' to 'very agree'. The higher the score, the greater the work pressure that nurses feel. The Cronbach's α coefficient of the scale in this study was 0.892.

2.2.3 General Self-efficacy Scale (GSES)

The Chinese version of the general self-efficacy scale [8], a total of 10 items. Likert 4-level scoring method was used to assign 1-4 points from 'completely incorrect' to 'completely correct'. The total score was 10 ~ 40 points, and the higher the score, the higher the level of self-efficacy. The Cronbach's α coefficient of the scale in this study was 0.876.

2.2.4 Masler Burnout Inventory (MBI)

The nurse-specific version of the job burnout scale [9] was used, including three dimensions of emotional exhaustion (EE), depersonalization tendency (DP) and personal accomplishment (PA), with a total of 22 items. Using the Likert 7-level scoring method, the higher the score of emotional exhaustion and depersonalization, the lower the score of personal accomplishment, the more serious the burnout. The Cronbach's α coefficient of the scale in this study was 0.901.

2.3 Methods of Data Collection

After obtaining the consent of the nursing department of each hospital, the questionnaire was distributed by the uniformly trained researchers using the morning meeting time of the department. Fill in anonymously, distribute and recycle on site. A total of 130 questionnaires were distributed and 120 valid questionnaires were recovered, with an effective recovery rate of 92.3%.

2.4 Statistical Methods

SPSS 26.0 software was used for data analysis. Count data were described by frequency and percentage; the measurement data were described by mean ± standard deviation. T test or analysis of variance was used for comparison between groups. Pearson correlation analysis was used to analyze the relationship between variables. Multiple linear regression analysis was used to analyze the influencing factors. Bootstrap mediating effect test was performed using Model 4 in Process plug-in. $P < 0.05$ was considered statistically significant.

3. Results

3.1 General Information of Operating Room Nurses in Primary Hospitals

A total of 120 nurses were included in this study, including 18 males (15.0%) and 102 females (85.0%). The age was mainly 25-35 years old, accounting for 62.5%. The education background was mainly junior college and undergraduate, accounting for 91.7%; the professional titles were mainly nurses and supervisor nurses. Operating room working years of less than 5 years accounted for 35.0%, 5 to 10 years accounted for 45.0%, see Table 1.

Table 1: General information of operating room nurses in primary hospitals

Groups	Number of people (n)	composition ratio (%)	proportion（%）
Gender	Male	18	15.0
	Female	102	85.0
Age	<25	15	12.5
	25~35	75	62.5
	35	30	25.0
Education	Secondary school	10	8.3
	Junior college	65	54.2
	Bachelor degree and above	45	37.5
Title	Nurse	30	25.0
	senior nurse	58	48.3
	Supervisor Nurse and above	32	26.7
Operating room working years	<5	42	35.0
	5~10	54	45.0
	>10	24	20.0
Employment method	In edit	48	40.0
	Contract system	72	60.0
Monthly average number of night shifts	<4	25	20.8
	4~8	68	56.7
	>8	27	22.5

3.2 The Scores of Job Stress, Self-efficacy and Job Burnout of Operating Room Nurses in Primary Hospitals

The results showed that the total score of working pressure of operating room nurses was (85.42 ± 12.36) points, and the average score of items was (2.44 ± 0.35) points, which was above the middle level. Among them, the dimension of 'workload and time allocation' has the highest score, followed by working environment and resources. The total score of self-efficacy was (22.15 ± 5.48), and the average score of items was (2.21 ± 0.55), which was at a medium level. The total score of job burnout was (68.93 ± 15.27), and the score of emotional exhaustion dimension was the highest, as shown in table 2.

Table 2: Work stress, self-efficacy and job burnout scores of operating room nurses in primary hospitals

Variable/Dimension	Number of items	Range of scores	Score	Average item score
Total score of job stress	35	35~140	85.42 ± 12.36	2.44
Workload and time allocation	5	5~20	14.52 ± 3.15	2.90
Work environment and resources	3	3~12	8.45 ± 2.08	2.82
Patient care	11	11~44	29.86 ± 5.42	2.72
Management and interpersonal relationships	9	9~36	20.15 ± 4.12	2.24
Nursing profession and work	7	7~28	12.44 ± 3.56	1.78
Total score of self-efficacy	10	10~40	22.15 ± 5.48	2.22
Total score of job burnout	22	0~132	68.93 ± 15.27	3.13
Emotional exhaustion (EE)	9	0~54	32.45 ± 8.62	3.61
Depersonalization (DP)	5	0~30	12.86 ± 4.25	2.57
Personal accomplishment (PA)	8	0~48	23.62 ± 6.18	2.95

Table 3: Correlation analysis of job stress, self-efficacy and job burnout

Variable	Job stress	Self-efficacy	Emotional exhaustion	Depersonalization	Personal accomplishmen
Job stress	1.000				
Self-efficacy	-0.485**	1.000			
Emotional exhaustion	0.612**	-0.524**	1.000		
Depersonalization	0.485**	-0.468**	0.625**	1.000	
Personal accomplishment	0.396**	-0.534**	0.512**	0.438**	1.000
Total score of job burnout	0.582**	-0.565**	0.895**	0.786**	0.752**

Notes: ** P < 0.01*

Table 4: The mediating effect of self-efficacy between job stress and job burnout

path	Type of effect	effect size	Boot SE	BootLLCI	BootULCI	Relative effect value (%)
working pressure →job burnout	gross effect	0.628	0.085	0.459	0.797	-
	direct effect	0.472	0.091	0.292	0.652	75.2
	indirect effect	0.156	0.042	0.083	0.246	24.8

Note: BootLLCI and BootULCI are the lower and upper limits of the 95 % confidence interval estimated by Bootstrap method, respectively. The model controls confounding variables such as educational background, professional title and working years.

3.3 Correlation Analysis of Job Stress, Self-efficacy and Job Burnout

Pearson correlation analysis showed that job stress was significantly positively correlated with job burnout ($r = 0.612$, $P < 0.01$), job stress was significantly negatively correlated with self-efficacy ($r = -0.485$, $P < 0.01$), and self-efficacy was significantly negatively correlated with job burnout ($r = -0.534$, $P < 0.01$), as shown in Table 3.

3.4 The Mediating Effect of Self-efficacy Between Job Stress and Job Burnout

Taking the total score of job burnout as the dependent variable, the total score of work pressure as the independent variable, and the total score of self-efficacy as the intermediary variable, the regression analysis was carried out after controlling the confounding variables such as education background, professional title and working years. The results showed that the Bootstrap 95 % confidence interval of the indirect effect did not include 0 (LLCI = 0.083, ULCI = 0.246), indicating that the mediating effect of self-efficacy between job stress and job burnout was significant. The mediating effect value is 0.156, accounting for 24.8 % of the total effect value, as shown in Table 4.

4. Discussion

4.1 Analysis of the Status Quo of Job Stress and Job Burnout of Operating Room Nurses in Primary Hospitals

The results of this study show that the working pressure and job burnout level of operating room nurses in primary hospitals are at a high level, especially the pressure of workload and time allocation dimension is the most prominent. This is closely related to the actual working environment of primary hospitals. First of all, with the advancement of hierarchical diagnosis and treatment policy, the number of operations in primary hospitals has increased year by year, but the staffing has not been expanded synchronously, resulting in long-term overload of nurses. Secondly, the work of the operating room is irregular, continuous and high-risk. There are many emergencies during the operation, which requires nurses to remain vigilant at all times. This continuous tension can easily lead to emotional exhaustion. In addition, emotional exhaustion scored the highest in job burnout, indicating that nurses generally felt exhausted and their enthusiasm for work decreased. This result suggests that primary hospital managers should attach great importance to the allocation of human resources for operating room nurses, implement flexible scheduling, and reduce the workload of nurses from the source.

4.2 The Status Quo and Protective Effect of Self-efficacy of Operating Room Nurses in Primary Hospitals

In this study, the self-efficacy of operating room nurses was at a medium level, and it was significantly negatively correlated with job stress and job burnout. This result is consistent with the existing research [10-11], indicating that job stress and job burnout are one of the key factors affecting nurses' self-efficacy. Foreign studies also show that there is a significant correlation between self-efficacy and occupational stress. The lower the self-efficacy, the higher the occupational stress [12]. Self-efficacy is an important predictor of nurses' effective work and work engagement, which plays an important role in nurses' work performance and mental health. This is in line with Bandura's self-efficacy theory, that is, self-efficacy is an important psychological resource for individuals to cope with stress. Nurses with high self-efficacy are confident in their ability to perform their jobs. In the face of heavy surgical tasks and complex interpersonal relationships, they tend to adopt a positive coping style and regard stress as a challenge rather than a threat, thus

effectively buffering the damage of stress to mental health. On the contrary, nurses with low self-efficacy are prone to self-doubt and powerlessness when facing high pressure, and think that they cannot control the situation. This negative cognitive evaluation will increase the psychological burden, and then induce or aggravate job burnout. Therefore, improving self-efficacy may be an effective entry point to reduce job burnout.

4.3 Analysis of the Mediating Mechanism of Self-efficacy

The important innovation of this study is to verify the partial mediating effect of self-efficacy between job stress and job burnout. The mediating effect accounted for 24.8 % of the total effect, indicating that part of the mechanism of job stress on job burnout is achieved by weakening the self-efficacy of nurses. The mechanism of action can be explained as follows: long-term excessive work pressure will continuously consume the individual's psychological resources, resulting in nurses' learned helplessness in repeated setbacks and fatigue, and reducing their evaluation of their own ability. When nurses lose confidence in their ability to complete surgical cooperation and emergency treatment, work becomes a heavy psychological burden, which leads to emotional exhaustion and depersonalization, and ultimately leads to job burnout. This finding has important management implications: to reduce nurses' job burnout, in addition to routinely reducing work pressure, it can also block this vicious cycle through the way of psychological empowerment, that is, improving nurses' self-efficacy. Even if the objective existence of work pressure is difficult to improve in the short term, a high level of self-efficacy can play the role of 'psychological buffer'.

4.4 Countermeasures and Suggestions

Based on the above research conclusions, the following management suggestions are proposed: (1) Rationally allocate human resources and reduce pressure from the source. The managers of primary hospitals should implement flexible scheduling according to the fluctuation of surgical volume, establish a mobile nurse pool, and reduce the frequency of nurses' overtime. At the same time, optimize the operating room workflow, reduce non-nursing work time, so that nurses have more time to return to patient care. (2) Implement hierarchical training to enhance professional self-efficacy. To carry out systematic professional skills training and emergency drills for nurses with low seniority and low academic qualifications, so that they can master the skills of surgical cooperation. For senior nurses, encourage them to participate in scientific research and teaching, and enhance their sense of professional achievement. Through successful professional experience to enhance their self-efficacy. (3) Build a psychological support system and implement positive incentives. Psychological files of operating room nurses were established, and psychological counseling and decompression training were carried out regularly. Managers should adopt more positive incentives to affirm nurses' work performance in a timely manner, create a positive department culture, and help nurses rebuild their professional self-confidence, so as to improve their ability to resist stress and reduce job burnout [13-14].

4.5 Research Limitations and Prospects

This study adopts a cross-sectional survey and cannot infer causality. In the future, longitudinal studies can be carried out to further verify the dynamic changes between variables; the sample only selected primary hospitals in a certain area, and the representativeness may be limited. In the future, the sample range can be expanded for multi-center research.

5. Conclusion

In summary, the current situation of job stress and job burnout of operating room nurses in primary hospitals is not optimistic, and self-efficacy plays a partial mediating role. Work stress can not only directly lead to job burnout, but also indirectly aggravate the degree of burnout by reducing self-efficacy. Nursing managers should pay attention to the psychological cognitive state of nurses. While reducing work pressure through organizational management means, they should pay more attention to improving the self-efficacy of nurses as an important intervention strategy to reduce job burnout and stabilize the primary nursing team.

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