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Original Article

Factors influencing quality of life and work of male nurses in Hainan Province: logistic regression analysis

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Abstract: Objective: The purpose of this study was to explore the factors affecting the quality of life and work of male nurses in Hainan Province, so as to provide a theoretical basis to improve the motivation of male nurses, reduce job-hopping intentions, and maintain the stability of labor force. Methods: A total of 393 male and 393 female nurses with registered nurse qualifications from 53 hospitals in Hainan Province were selected as the research subjects. The distribution in various hospital departments, quality of life, stress coping ability, social support and job satisfaction were compared. The factors affecting the quality of life of male nurses were analyzed. Results: Male nurses worked mainly in the intensive care unit (ICU), operating rooms and emergency departments, while female nurses worked mainly in general wards. There were significant differences in physical function, general health, social functioning, and mental health between male and female nurses ($P<0.05$), and female nurses had significantly higher Physical Component Summary and Mental Component Summary scores than male nurses ($P<0.05$). There was no significant difference in coping styles between male and female nurses in stressful working environments ($P>0.05$). Male nurses scored significantly lower than female nurses in objective support, subjective support, support utilization and total score ($P<0.05$), and male nurses exhibited significantly lower job satisfaction than female nurses ($P<0.05$). Univariate and multivariate analyses showed that years of experience, work unit, monthly income, social support and job satisfaction were the independent risk factors affecting the quality of life of male nurses. Conclusion: Male nurses in Hainan Province mostly worked in departments with high work intensity and pressure, and the overall quality of life, social support and job satisfaction were significantly lower than those of female nurses. Therefore, psychological guidance for male nurses should be strengthened, the salary of male nurses should be increased, higher social support should be provided, to reduce job burnout and thus improve their quality of life.

Keywords: Hainan Province, male nurses, nursing staff, quality of life

Introduction

With the development of medicine and healthcare in China, hospitals not only provide "treatment", but also pay attention to "patient needs". Nursing care is no longer confined to the hospital, but gradually extended to the community and family, which has put a higher demand on nurses. Nurses are responsible for the care of patients, and they face heavy workloads and high-risk emotional and physical challenges [1].

The multidisciplinary Global Advisory Group of the World Health Organization has recognized the worldwide shortage of nurses. The shortage is further exacerbated by the increased demand for nurses by pregnant women, while overall fewer people are choosing the profession of nursing [2]. Although nursing is still a female-dominated profession, more males are joining the ranks than in previous decades. Male nurses may have some advantages over female nurses, and as a result, male nurses mostly work in high-risk departments such as the emergency department, intensive care unit (ICU), and operating room [3]. Male nurses have played an important role in improving the nursing service system in China, promoting the vertical development of the industry and optimizing the gender ratio, laying a foundation for the long-term development of nursing in China.

Although male nurses have many advantages in nursing work, there were 74,000 registered male nurses in China as of 2018, accounting

for only 2.18% of the total number of registered nurses, according to the database from the Ministry of Health of China. According to the U.S. Bureau of Labor Statistics (BLS), as of 2019, more than 12% of registered nurses in the U.S. are males and about 7% in Canada [4, 5]. Although the number of male nurses in China has increased rapidly in recent years, it is still far below that of other developed countries.

Despite the expansion of the nursing profession in China and the recruitment of male students in universities and colleges, the proportion of male applicants remains low. Many male nurses find it difficult to find a sense of belonging at work due to factors such as gender and the pressure brought by traditional concepts of society and family, resulting in a higher demission rate of male nurses than female nurses [6, 7].

Hainan Province has been building itself into an all-area tourism island and a free trade zone, focusing on the development of international medical tourism and high-end medical services, which has put forward higher demands for medical staff in Hainan Province. As indispensable members of modern nursing, male nurses will become the focus of nursing work in the entire province.

By analyzing the work status and quality of life of male and female nurses in Hainan Province, this study found key factors affecting the work and quality of life of male nurses, and truly reflected the difficulties and career aspirations of male nurses in Hainan Province, so as to provide a theoretical basis for the hospital managers to mobilize the motivation of male nurses, reduce job-hopping intentions, maintain the stability of the nursing staff and improve the overall ability of the nurse staff.

Materials and methods

Baseline data

In this prospective study, male and female nurses with registered nurse qualifications who were engaged in nursing work in 53 hospitals of Hainan Province were selected as the research subjects and divided into a male nurse group (n=393) and a female nurse group (n=393). The study was approved by the Ethics Committee of The First Affiliated Hospital of Hainan Medical University [Approval Document No. 2021 (Scientific Research) No. 38].

Inclusion criteria: male and female nurses with more than 1 year of experience; with no chronic diseases; informed consent was obtained.

Exclusion criteria: male and female nurses with less than 1 year of experience; those who were on leave during the survey; suspended from practice; those who were not engaged in clinical nursing.

Research methods

Research instrument: A questionnaire was used in this study.

Baseline data: The baseline data questionnaire included age, years of experience, educational background, professional title, night shift, and monthly income.

Measurement indicators: In this study, quality of life, coping style, and job satisfaction were the primary indicators, while baseline data and social support were secondary indicators.

Quality of life scale (SF-36 scale): The quality of life was assessed using the SF-36 scale, a widely used scale for measuring quality of life developed by the Boston Health Research Institute, USA [8, 9].

The SF-36 is a 36-item self-report measures health-related quality of life. It has 8 subscales measuring different domains of health-related quality of life, including physical functioning (PF), role-physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role-emotional (RE), and mental health (MH). Physical Component Summary (PCS) combines items from the PF, RP, BP, and GH scales, while Mental Component Summary (MCS) includes role limitations caused by emotional problems, VT, SF, and MH. Each scale ranges 0-100, with 0 as the worst and 100 as the best, and a higher score indicates better quality of life [10].

Simple Coping Style Questionnaire (SCSQ): The SCSQ is a self-rated questionnaire with 20 items. The SCSQ includes two dimensions: positive coping style (items 1-12) and negative coping style (items 13-20). The higher dimension score indicates a more frequent corresponding coping style used by individuals with stress. A four-point scale was used, with none =0, occa-

sional =1, sometimes =2, and often =4) [11]. Higher total scores for items 1-12 indicate a tendency to adopt a positive coping style under stress, and higher total scores for items 13-20 indicate a tendency to adopt a negative coping style under stress [12].

Social Support Rating Scale (SSRS): The SSRS was designed and developed by Xiao Shuiyuan in China. The scale contains 3 subscales with 10 items, namely, objective support (3 items), subjective support (4 items), and support utilization (3 items), and each item is divided into 4 grades, ranging 0-40 points, with higher scores indicating higher social support [13]. A total score of <20 represents low social support, 20-30 represents general social support, and >30 represents high social support.

Nurse Job Satisfaction Scale (MMSS): The Mueller/McCloskey Nurse Job Satisfaction Scale (MMSS) is a commonly used scale to measure job satisfaction of nurses and to study the influence of incentives and rewards on demission rates of staff nurses [14]. It is a 31-item instrument using a 5-point Likert scale, covering 8 areas, including benefits, scheduling, work-family balance, relationship with co-workers, opportunities for interaction, career opportunities, being praised and recognized, and control and responsibility, with 5 representing very satisfied and 1 representing very dissatisfied. A higher score represents higher job satisfaction [15, 16].

Quality control: In the process of questionnaire design, experts were consulted, and the questionnaire was constantly revised to improve the reliability and validity.

Prior to the implementation of the survey, the purpose and significance of the study was explained to the study participants, and the questionnaire was distributed via the online applet of WeChat, namely Wenjuanxing, a platform providing functions equivalent to Amazon Mechanical Turk. All blanks were filled without omission to ensure the integrity of the returned questionnaires.

Statistical analysis

SPSS 17.0 software was used for statistical analysis. The baseline data, quality of life, stress coping style, social support, and job satisfaction were analyzed using descriptive statistics, and the measurement data were expressed as mean ± standard deviation (mean ± SD). The counting data were expressed as percentages. In this study, ANOVA was adopted for single factor analysis (such as age and hospital level), and multiple liner regression was used for multiple factor analysis to explore the relationship between quality of life, stress coping style, social support and job satisfaction among male nurses in Hainan Province. A two-sided *P* value of <0.05 was considered to be statistically significant.

Results

Comparison of baseline data

There was no significant difference between male and female nurses in terms of age, hospital level, years of experience, educational background, profession title, night shift, and monthly income (P>0.05) (**Table 1**), suggesting that the general data of male and female nurses included was comparable.

Comparison of departments between male and female nurses

Male nurses mostly worked in departments with higher work intensity such as ICU, operating room and emergency department, while female nurses mostly worked in general wards. A significant difference was observed in working departments between male and female nurses (P=0.032) (**Figure 1**), suggesting that male nurses may have had more intense or stressful workloads than female nurses.

Comparison of quality of life

Male and female nurses exhibited significant difference in PF, GH, SF, and MH (P=0.015, 0.027, 0.005 and 0.020, respectively), and showed no significant difference in RP, BP, VT, and RE (P=0.132, 0.358, 0.543 and 0.089, respectively). Both PCS and MCS scores were significantly higher in female nurses than in male nurses (P=0.008 and 0.039, respectively) (**Figure 2**), suggesting that male nurses generally had a lower quality of life than female nurses.

Comparison of coping styles between male and female nurses

The positive coping score of male nurses (26.87±13.07) was lower than that of female nurses (27.64±14.46), and the negative coping

Table 1. Baseline data of male and female nurses (n)

Baseline data		Males (n=393)	Females (n=393)	X^2	*P*
Age (years old)	20-25	81	72	5.202	0.267
	26-30	128	133		
	31-35	103	82		
	36-40	27	35		
	Over 40 years	54	61		
Hospital level	Grade 3	341	336	0.896	0.639
	Grade 2	48	50		
	Grade 1	4	7		
Years of experience	0-4 years	124	118	3.330	0.504
	5-9 years	109	100		
	10-14 years	89	97		
	15-19 years	21	32		
	20 years or more	50	46		
Educational background	Secondary school	22	26	4.657	0.199
	Tertiary	123	143		
	Undergraduate	224	194		
	Bachelor's degree or above	24	30		
Title	Nurse	100	120	3.274	0.351
	Caregivers	168	155		
	Nurse practitioner in charge	99	88		
	Supervising nurse or above	26	30		
Night shift	Yes	300	315	1.682	0.195
	No	93	78		
Monthly income	Under 5000	68	72	4.368	0.224
	5000-7000	122	146		
	7000-9000	134	127		
	Over 9000 years	69	48		

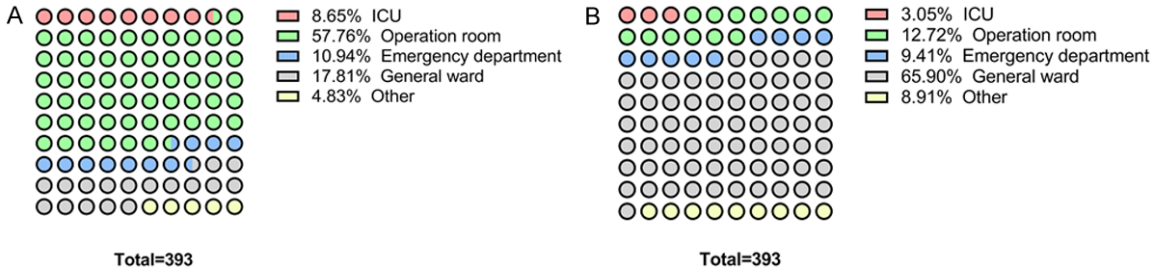

Figure 1. Analysis of working departments between male and female nurses. Male nurses (A) mainly were mainly assigned to ICU, operating room and emergency department, while female nurses (B) were mainly assigned to general wards. ICU: intensive care unit.

score of male nurses (12.73±4.07) was higher than that of female nurses (12.60±4.85); however, there was no significant difference in scores of positive and negative coping styles between male and female nurses (P=0.342 and 0.738, respectively) (**Figure 3**).

Comparison of social support and job satisfaction

Male nurses scored significantly lower than female nurses in terms of objective support, subjective support, support utilization and total

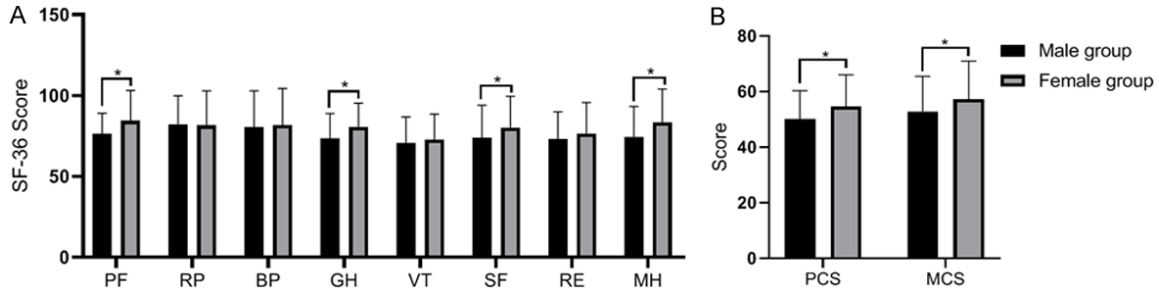

Figure 2. Quality of life of male and female nurses. A: Male and female nurses exhibited significant difference (P<0.05) in physical functioning (PF), general health (GH), social functioning (SF), mental health (MH), and showed no significant difference (P>0.05) in role-physical (RP), bodily pain (BP), vitality (VT), role-emotional (RE). B: Both Physical Component Summary (PCS) and Mental Component Summary (MCS) scores were significantly higher for female nurses than for male nurses (P<0.05). *, P<0.05.

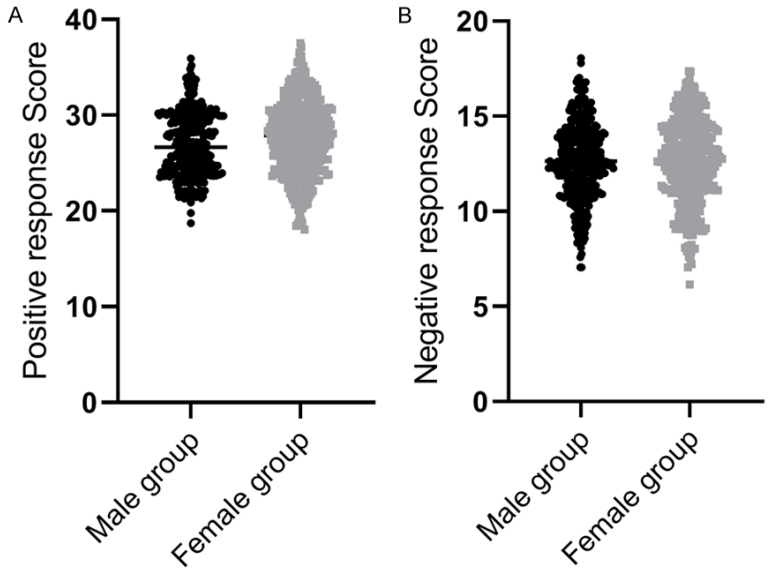

Figure 3. Analysis of coping styles between male and female nurses. The differences in both positive (A) and negative (B) coping styles between male and female nurses were not significant (P>0.05).

score (P=0.006, 0.011, 0.026 and 0.030, respectively), and male nurses scored significantly lower than female nurses regarding job satisfaction (P=0.028, **Figure 4**), suggesting that male nurses experienced a low level of respect at work, lower level of support by patients and their families, and less sense of accomplishment at work than female nurses, thus leading to lower job satisfaction and higher tendency of burnout.

Analysis of factors affecting the quality of life of male nurses

Univariate analysis showed that the age, years of experience, work unit, night shift, monthly income, social support and job satisfaction of male nurses were the factors affecting the quality of life of male nurses (**Table 2**).

Multivariate logistic regression analysis was performed with the determined indicators as independent variables and the quality of life scores as dependent variables. The results of the analysis showed that the years of experience, work unit, monthly income, social support and job satisfaction of male nurses were the independent risk factors affecting the quality of life of male nurses (**Table 3**).

Discussion

The number of registered nurses in China has been rising and the shortage of nurses has been moderately alleviated, but with the increase of hospital visits, the work pressure of nurses has also been increasing [17]. Long-term high intensity workload causes job burnout, which seriously affects the quality of work and life of nurses and indirectly affects patient safety [18-20]. Therefore, improving the quality of life of nurses and reducing the negative emotions brought about by work pressure is of great significance to improve nursing satisfaction [21, 22].

In this study, male nurses worked in departments such as ICU, operating room and emer-

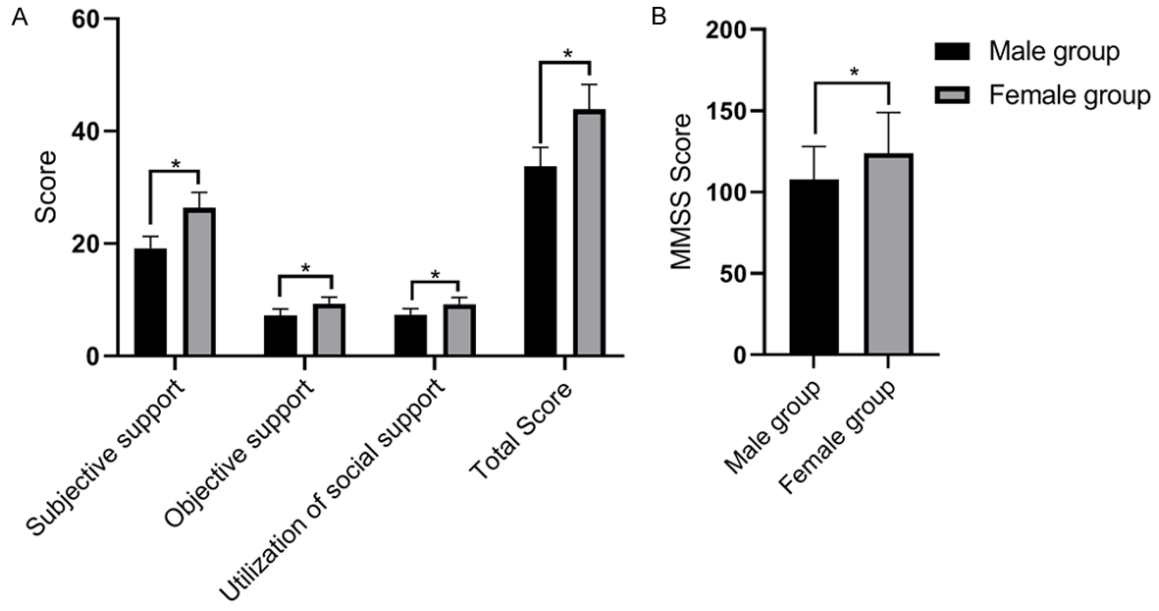

Figure 4. Analysis of social support and job satisfaction among male and female nurses. A: Male nurses scored significantly lower than female nurses in objective support, subjective support, support utilization and total score (P<0.05); B: Male nurses scored significantly lower than female nurses in job satisfaction (P<0.05). *, P<0.05.

gency room, and female nurses mainly worked in general wards, resulting in male nurses having higher work intensity and stress than female nurses. Yan et al. found through a survey that working department, weekly working hours, PF, and social support were risk factors for the occurrence of musculoskeletal disorders, which affect the quality of life of nurses when occupational musculoskeletal disorders occur [23], which is consistent with our findings. Univariate and multivariate analyses showed that years of experience, work unit, monthly income, social support and job satisfaction were the independent risk factors affecting the quality of life of male nurses. Alhrabi et al. found that age, work experience, marital status, and work shift could affect quality of life scores for nurses in Saudi Arabian hospitals [24]. Nowrouzi et al. found that age, marital status, and education were factors affecting the quality of life for registered nurses in the United States and Canada [25]. Akter et al. investigated the quality of life of nurses in tertiary hospitals and found that monthly income was the most crucial factor affecting the quality of life of nurses, followed by working environment, organizational commitment and work pressure [26]. Makabe et al. investigated the determinants of quality of life of nurses in Asian countries and found that the quality of life was correlated with the level of the hospital and the working environment of nurses [27]. Wang et al. conducted a cross-sectional study on nurse burnout and quality of work in China and found that about 64% of nurses suffered from job burnout, which together with hospital level, age, income, night shift and nurse to doctor ratio were all factors affecting quality of life and work [28]. This research indicate that age, working environment, income and other factors can affect the quality of life of nurses, which is basically the same as the conclusion of this study.

Most male nurses were assigned to work in departments with high work intensity and high risk. However, the social support and job satisfaction of male nurses were significantly lower than those of female nurses. The present study showed that the quality of life of male nurses is affected by years of experience, work unit, monthly income, social support and job satisfaction.

Hospital managers should give more care to male nurses in their routines, use publicity channels to guide patients showing an in-depth understanding of nursing work by male nurses, and then change their attitudes toward male nurses, improve the social support of male

Table 2. Comparative analysis of quality of life scores of male nurses ($\bar{x} \pm s$) [n=393]

Item		Number	Quality of life scores	t/X^2	*P*
Age (years old)	20-25	81	79.20±22.20	2.636	0.047
	26-30	128	76.96±14.40		
	31-35	103	80.52±13.71		
	36-40	27	82.35±15.81		
	Over 40 years	54	83.28±17.64		
Hospital level	Grade 3	341	83.20±17.58	2.200	0.088
	Grade 2	48	80.84±13.10		
	Grade 1	4	81.69±13.11		
Years of experience	0-4 years	124	74.92±13.05	4.374	0.015
	5-9 years	109	77.99±19.02		
	10-14 years	89	79.83±18.25		
	15-19 years	21	83.92±18.85		
	20 years or more	50	82.64±19.57		
Educational background	Technical secondary school	22	77.47±19.41	1.421	0.236
	Junior college	123	79.88±17.55		
	Bachelor's degree	224	82.31±19.52		
	Above bachelor's degree	24	81.89±20.34		
Department	ICU	34	74.46±18.31	5.185	0.006
	Operating room	227	75.21±20.14		
	Emergency room	43	78.15±19.20		
	General ward	70	82.65±16.27		
	Other	19	82.36±20.34		
Title	Nurse	100	79.64±18.76	0.986	0.334
	Caregivers	168	80.64±19.53		
	Nurse Supervisor	99	81.05±20.17		
	Nurse practitioner or above	26	80.36±22.95		
Night shift	Yes	300	79.53±21.05	3.040	0.024
	No	93	82.67±18.69		
Monthly income	Under 5000	68	74.15±13.86	14.546	0.000
	5000-7000	122	77.64±18.17		
	7000-9000	134	80.12±20.11		
	Over 9000 years	69	83.54±17.94		
Job satisfaction	Dissatisfied	102	73.54±17.83	8.902	0.000
	Satisfied	291	80.15±21.67		
Social support	Less	138	72.06±15.13	6.517	0.002
	General	146	77.64±18.05		
	More	109	81.05±16.42		

ICU: intensive care unit.

Table 3. Logistic regression multifactor analysis of quality of life of male nurses

Variable	β	*SE*	*Wals*	P	OR	95% CI for Exp	
						Lower	Upper
Years of experience	0.391	0.178	5.031	0.029	1.433	1.059	2.087
Department	0.132	0.039	11.414	0.001	0.873	0.814	0.933
Monthly income	0.267	0.097	8.346	0.006	1.295	1.082	1.515
Job satisfaction	0.331	0.092	11.721	0.001	1.431	1.065	1.612
Social support	0.265	0.091	8.347	0.006	1.295	1.087	1.512

nurses, pay attention to the psychological condition of male nurses, mobilize their motivation, reduce burnout, and improve job satisfaction, so as to enable male nurses to better play their roles in serving patients. The prospect lies in guiding hospital management and reducing the turnover rate of male nurses. However, this study also has some deficiencies. In this study, only male nurses working in hospitals in Hainan Province were investigated. Through the comparative analysis of male and female nurses in Hainan Province, the risk factors affecting the quality of life of male nurses were found; however, there is no comprehensive comparative analysis on the situation of more male nurses in different cities. In the next step, a wider range of research subjects will be included to improve the comprehensiveness of research findings.

In conclusion, male nurses in Hainan Province mostly worked in departments with high work intensity and pressure, and the overall quality of life, social support and job satisfaction were significantly lower than those of female nurses.

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Disclosure of conflict of interest

None.

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