



Research Article

An Examination of Work-Family Conflict and Influencing Factors Among Operating Room Nurses: A Cross-Sectional Analysis

Cheng Yu, Jianmei Liu, Cuixian Chen, Dianye Yao*

The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, Guangdong Province, China.

*Corresponding author: Dianye Yao, The First Affiliated Hospital of Sun Yat-sen University, Guangzhou, Guangdong Province, China.

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Abstract

Objective: To explore the prevalence and determinants of work-family conflict among operating room nurses within a tertiary care setting. **Design:** A Cross-Sectional Analysis. **Methods:** An online survey was conducted utilizing the General Information Questionnaire, Work-Family Conflict Scale, Sense of Organizational Support Scale, and Use of Work-based Communication Tools Scale, and 102 nurses in the operating room of a tertiary hospital were surveyed using the convenience sampling method, and stratified regression analysis was used to explore the influencing factors of their work-family conflicts. **Results:** The total work-family conflict score of operating room nurses was (55.29±10.03), the total organizational support feeling was (37.39±10.08), and the total use of work-based communication tools was (10.53±1.89). Among the nurses in the operating room, personnel relationships, children's situation, straight down overtime, night shift, and income satisfaction explained 16.5% of the total variance of work-family conflict; the addition of work connectivity behaviors, and sense of organizational support explained 40.7% of its total variance; and the sense of managerial support and work connectivity behaviors explained 31.2% and 16.6% of its total variance individually, after eliminating the interference of the control variables. **Conclusion:** Operating room nurses' work-family conflict is at a high level and is influenced by multiple factors, among which the sense of organizational support and work connectivity behaviors have a greater impact on their work-family conflict, and nursing managers can reduce the level of work-family conflict by increasing the sense of organizational support of the operating room nurses and decreasing their work connectivity behaviors.

Keywords: operating room nurse; work-family conflict; perceived organizational support; work connectivity behaviour.

Introduction

The operating room is one of the main places to treat critically ill patients in hospitals, and its nursing work is characterized by high pressure, high intensity, and long time, resulting in nurses having to pour more of their energy and time into their work, which reduces their attention to their family life, resulting in work-family conflicts [1], triggering burnout, anxiety and other adverse emotions, which indirectly act on work behaviors [2], and affecting patient safety [3], and Reduce the sense of happiness

in life, reduce the fertility intention of female nurses of the right age. Sense of organizational support refers to an employee's overall perception and belief about how the organization perceives their contributions and cares about their interests [4], and work connectivity behavior refers to an individual's behavior of taking on multiple roles in life while engaging in work during off-duty hours and at any place through communication methods such as WeChat, QQ, phone calls, text messages, and emails [5]. According to work-family conflict boundary theory [6], a sense of organizational support promotes work-family balance by assisting members in internalizing organizational culture. Work-connected behaviors increase healthcare workers' productivity and

convenience, but they also make it difficult for healthcare workers to disengage from their clinical work after hours, with continued depletion of physical and mental resources and blurring of work-family domain boundaries [7]. At present, most of the studies on the sense of organizational support are on corporate employees and so on, and they are mostly focused on married groups and dual-income families [8], there are fewer studies on operating room nurses, and the studies on work connectivity behaviors are mainly on teachers, corporate employee groups [9] and so on, and there are not many studies on operating room nurses. Therefore, this study investigated the current situation of work-family conflict among operating room nurses and explored its influencing factors in terms of demographic characteristics, sense of organizational support, and work connectivity behaviors, to provide a reference for improving work-family conflict among operating room nurses, improving the quality of nursing services, and providing a guarantee for the implementation of the national birth policy.

Objects and Methods

Research object

The operating room nurses of a tertiary hospital were selected in August 2024 by convenience sampling method as the study subjects. Inclusion criteria: ①qualified to practice as a nurse and have worked continuously in the operating room for ≥ 1 year; ②those who gave informed consent and voluntarily cooperated with the survey. Exclusion Criteria: ①external refresher operating room nurses during the survey period; ②operating room nurses who did not work in the hospital during the survey period, including those on maternity leave, personal leave, sick leave, etc.

Research tools

General information

The questionnaire for general information was self-designed by the research group. It included 12 entries on age, gender, years of working experience in the operating room, education, title, position, marital status, children's situation, personnel relationship, number of night shifts, overtime work, and personal income satisfaction.

Work-Family Conflict Scale

The Work-Family Conflict Scale, which was translated and revised by Zhang Womiao [10], was used. The scale has 3 dimensions (6 items per dimension): time-based conflict, stress-based conflict, and behavior-based conflict, with the first 3 items in each dimension being work-family interference conflict and the last 3 items being family interference with work conflict. A Likert 5-point scale was used, with scores ranging from 1 to 5 from "strongly disagree" to "strongly agree", and the total score ranging from 18 to 90, with higher scores indicating higher levels of workplace conflict.

The Cronbach's alpha coefficient for the total scale in this study was 0.96, and the Cronbach's alpha coefficients for the time-based conflict, stress-based conflict, and behavior-based conflict dimensions were 0.93, 0.93, and 0.94, respectively.

Sense of Organizational Support Scale

The Sense of Organizational Support Scale revised by Zuo Hongmei [11] was used. The scale consists of two dimensions, emotional support, and instrumental support, with a total of 13 entries. The Likert 5-point scale was used, with scores ranging from 1 to 5 from "very non-compliant" to "very compliant", and the total score ranging from 13 to 65, with higher scores indicating a higher level of organizational support. The Cronbach's alpha coefficient for the total scale in this study was 0.90, and the Cronbach's alpha coefficients for the dimensions of emotional support and instrumental support were 0.94 and 0.85, respectively.

Work-based communication tool use scale

The scale was first proposed by BOSWELL et al. [12] in 2007. It was mainly used to measure the frequency of work-related cell phone use by subjects at home. Later, based on BOSWELL et al.'s study, Zhang Xiaoxiang et al. [13] developed a work-related communication tool use scale based on the actual situation in China, which included three entries: emitting behaviors, receiving behaviors, and non-interactive types. The survey used the Work Communication Tool Usage Scale to measure the level of work-related connectivity behaviors of the respondents. A 5-point Likert scale was used, where 1 stands for "never" and 5 stands for "very often", with higher scores indicating more frequent work-related cell phone use during non-working hours. The Work-based Communication Tool Use Scale has good reliability The Cronbach's alpha coefficient of the scale is 0.83. The Cronbach's alpha coefficient of the scale in this measurement is 0.809.

Data collection method

This study utilized professional web-based questionnaire software to generate questionnaire links, and after passing the ethical audit of the hospital, the questionnaire links were distributed and filled out through the WeChat platform. Respondents were able to complete the survey via various devices, including computers, tablets, and smartphones. To avoid duplication in filling out the questionnaire, the background is set up so that only 1 questionnaire can be filled out by the same account, the same device, and the same IP address, and the questionnaires retrieved will be verified one by one. In this study, 115 questionnaires were distributed, and 112 questionnaires were recovered, with a recovery rate of 97%, of which 102 were valid questionnaires, with an effective rate of 91.07%. (1) Reasons for the loss of questionnaires: Patients refused to fill in the questionnaires in the middle of the study due to personal reasons

(3 cases). (2) Reasons for invalid questionnaires: 10 questionnaires were not filled out, of which, the answers were omitted (2 cases), the answers appeared with a certain regularity (5 cases), and the time was <3 minutes (3 cases).

Statistical methods

Data collected through the online platform were analyzed using SPSS version 22.0 for statistical analysis of the data, and the counting information was expressed as frequency and percentage, and the measuring information was expressed as mean and standard deviation. ANOVA was used for single-factor analysis, and the correlation of continuous variables was analyzed by Pearson correlation analysis. The total work-family conflict score was used as the dependent variable, and the factors that were meaningful in the single-factor analysis were used as the independent variables, and multiple linear hierarchical regression was applied to carry out the analysis of the factors affecting work-family conflict.

Results

Current status of work-family conflict, sense of organizational support, and work connectivity behavior of operating room nurses

The total score of operating room nurses' work interference family conflict was (30.33±5.75), the total score of family interference work conflict was (24.96±5.38), and the total score of operating room nurses' work-family conflict, sense of organizational support,

and work connectivity behaviors and the scores of each dimension are detailed in Table 1.

Item	Score Item	Mean Score
Work-Family Conflict	55.29±10.03	3.07±0.56
Time-based conflicts	19.15±3.79	3.19±0.63
Stress-based conflict	18.9±4.58	3.15±0.76
Behaviour-based conflict	17.25±4.46	2.87±0.44
Sense of organizational support	37.39±10.08	2.88±0.78
Emotional support	27.88±8.12	2.79±0.81
Instrumental support	9.51±2.61	3.17±0.87
Work Connectivity Behavior	10.53±1.89	3.51±0.63

Table 1: Total scores and scores of dimensions of work-family conflict, sense of organizational support, and out-of-hours work-connected behaviours among nurses in the operating room (n=102, X±S).

Univariate analysis of work-family conflict among operating room nurses

The results of the unifactorial analysis showed that the difference in total scores of work-family conflict scale of operating room nurses with different personnel relationships, children's situation, number of night shifts per month, and straight down situation was statistically significant (P<0.05), as shown in Table 2.

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Item	N	Percentage	Work-family conflict	t/F value	P value
			(Score, X±S)		
1. Age (years).				0.503	0.734
≤25	14	0.137	56.07±9.23		
26-30	52	0.51	54.73±9.95		
31-35	13	0.127	58.69±12.07		
36-40	11	0.108	53.82±10.60		
≥41	12	0.118	54.50±9.19		
2. Sex				0.654	0.514
Male	14	0.137	56.93±11.1		
Female	88	0.863	55.03±9.90		
3. Work experience (years)				0.481	0.749
45413	59	0.578	54.76±10.07		
45571	17	0.1667	56.53±10.06		
42309	9	0.0882	59.00±12.70		
16-20	8	0.0784	53.75±7.59		
≥21	9	0.0882	54.11±9.84		
4. Academic qualifications				1.111	0.269
Undergraduate	100	0.9804	55.45±10.03		
Graduate students and above	2	0.0196	47.50±9.19		
5. Title				1.244	0.298
Nurse	4	0.0392	59.25±6.55		
Nurse	69	0.6765	55.51±10.43		
Supervisory Nurse	21	0.2059	56.14±10.03		
Associate chief nurse and above	8	0.0784	49.25±6.11		
6. Position				1.514	0.225
None	54	0.5294	55.07±10.53		
Responsible team leader	38	0.3725	56.82±9.51		
Nurse manager	10	0.098	50.7±8.39		
7. Marital status				0.783	0.506
Single	32	0.3137	53.53±9.72		
Unmarried in love	18	0.1765	57.28±10.40		
Married without children	14	0.1373	53.93±7.88		
Married with children	38	0.3725	56.34±10.85		
8. Children status				5.426	0.006
No children	64	0.6275	54.8125±9.60		
Only child	15	0.1471	49.87±10.83		
Second child and above	23	0.2254	60.17±8.82		
9. Personnel relationship				2.109	0.037
Contract system	87	0.8529	56.15±10.30		

Career establishment	15	0.1471	50.33±6.56		
10. Number of night shifts per month				4.374	0.016
1-2 times	40	0.3922	55.38±10.45		
3-4 times	50	0.4902	53.46±9.08		
≥5 times	12	0.1176	62.67±9.79		
11. Straight down overtime				4.908	0
Hardly	10	0.098	52.70±8.96		
1~2 times a week	47	0.4608	52.00±9.68		
A week ≥ 3 times	30	0.2941	59.83±8.78		
Every day	15	0.1471	58.27±10.59		
12. Income (satisfaction)				4.41	0
Very dissatisfied	6	0.0588	61.33±7.26		
Less satisfied	9	0.0882	62.22±10.40		
Dissatisfied	26	0.2549	57.54±7.96		
More satisfied	55	0.5392	53.55±10.15		
Very satisfied	6	0.0588	45.17±8.13		

Table 2: Univariate analysis of work-family conflict among nurses in the operating room (n=102).

Correlation of work-family conflict of operating room nurses with a sense of organizational support and work connectivity behavior during non-working hours

The results of Pearson’s correlation analysis showed that the work-family conflict of operating room nurses was negatively correlated with the sense of organizational support ($r=-0.544$, $P<0.01$), and positively correlated with work-connected behaviors during non-working hours ($r=0.353$, $P<0.01$), which are shown in Table 3.

	Work Connectivity Behaviour	Sense of Organizational Support	Work-family conflict
Work Connectivity Behaviour	1		
Sense of Organizational Support	-.244*	1	
Work-family conflict	.353**	-.544**	1

Table 3: Correlation of work-family conflict with perceived organizational support and work connectivity behaviours during non-working hours among nurses in the operating room (n=102).

Stratified regression analysis of work-family conflict among operating room nurses

The total work-family conflict score of the operating room nurses was used as the dependent variable, and the five variables that were statistically significant in their t-tests and univariate analyses (personnel relationship and children’s situation, straight down overtime, night shift, and income satisfaction), work connectivity behaviors, and sense of organizational support were used as independent variables, and the assigned values are shown in Table 4, Stratified regression analysis using stepwise regression ($\alpha_{in} = 0.05$, $\alpha_{out} = 0.10$). At the same time, to eliminate the common demographic variables confounding interference, the sample’s operating room nurses’ personnel relations and children, straight down overtime, night shifts, and income satisfaction were entered into Model 1 as control variables first, and based on that, work connectivity behavior and sense of organizational support were entered into Model 2. In Model 1, it was shown that operating room nurses’ personnel relationships and children’s status, straight-down overtime, night shifts, and income satisfaction explained 16.5% of the total variance in work-family conflict; in Model 2, the addition of work connectivity behaviors, and sense of organizational support explained 40.7% of the total variance in work-family conflict; When control variables were excluded, perceptions

of organizational support explained 31.2% of the total variance in OR nurses' work-family conflict alone, and work connectivity was explained 16.6% of the total variance in OR nurses' work-family conflict alone, as detailed in Table 5.

Independent variable	Assignment of values
Personnel relations	Contract = 1, Establishment = 2
Children	No children = 1, only child = 2, two or more children = 3
Monthly Night Shift	1-2 times = 1, 3-4 times = 2, ≥ 5 times = 3
Overtime work	Hardly ever = 1, 1-2 times a week = 2, ≥ 3 times a week = 3, every day = 4

Table 4: Assignment of variables for stratified regression analysis.

Variable	Model 1	Model 2
(Constant)	3.53	3.378
Personnel relations	-0.34*	-0.205
Child status	0.17*	0.159*
Night Shift	0.05	0.038
Overtime work	0.07	0.02
Income satisfaction	-0.17**	-0.036
Sense of Organizational Support	/	-0.312***
Chinese version W ICTs	/	0.166*
R-square	0.165	0.407
DR-square	0.23	0.177
F-value	4.779***	9.216***
Note 1): Dependent variable: work-family conflict		
Note 2): ***P<0.001, **P<0.01, *P<0.05		

Table 5: Stratified regression analysis of work-family conflict among nurses in the operating room.

Discussion

The total work-family conflict scores of operating room nurses were higher than the moderate intensity values, and their perceived work-family conflict scores were higher than the home-work conflict scores

The survey findings revealed that the 102 participating operating room nurses had an overall work-family conflict score of 55.29 (± 10.03), which was higher than the moderate intensity value, which is consistent with the results of the study by Hou Dandan [14]. The work-family conflict subscale score was (30.33 \pm 5.76) and the family-work conflict subscale score was (24.96 \pm 5.39), which was moderately high, and their perceived work-family conflict scores were higher than the family-work conflict scores, which was in line with the results of the study conducted by Guo Yi-Nan [15]. From a dimensional perspective, the time-based

conflict dimension entry had the highest mean score, followed by stress-based conflict, and behavior-based conflict.

Analysis of the reasons may be as follows: First, it may be due to the operating room nurses are in a special environment to engage in special nursing professional groups, they are in a long time in the high-intensity, fast-paced work state, while the operating room nursing work is a professional and strong mental and physical labor of the full pay, heavy responsibility, heavy workload, high mental tension, long-term overload, irregular work, and life [16]. Secondly, when there is a conflict between work and life, operating room nurses tend to prioritize the performance of work duties, operating room nurses often work overtime straight down the line, take less care of the family, and do not get the understanding and recognition of the family, leading to work-family conflicts among operating room nurses. Third, time-based conflict scored

the highest, with operating room nurses working long continuous hours and often not being able to determine their off-duty time being a major cause of their work-family conflict.

It is suggested that nursing managers should pay attention to the work-family conflict situation of nurses in the operating room, and give care and emotional support when necessary so that nurses in the operating room can find a sense of belonging in group communication; through the establishment of time management training courses, yoga exercise and other group therapies can help to improve nurses' psychological efficacy and reduce the level of work-family conflict [17]; it is also possible to try to carry out a reasonable shift schedule according to the work-family conflict situation of nurses in the operating room, and make them take care of both work and family as much as possible in terms of time. Rational scheduling can also be tried according to the work-family conflict situation of nurses in the operating room so that they can take care of both work and family as much as possible in terms of time.

Analysis of Factors Influencing Work-Family Conflict among Operating Room Nurses

Relatively low levels of work-family conflict in operating rooms with high scores of perceived organizational supports

The mean score of the entry on the sense of organizational support of operating room nurses was (2.88 ± 0.78), which was at a medium-low level, similar to the findings of Chen Hong-juan [18]. The results of the stratified regression showed that OR nurses with high scores of perceived organizational supports had relatively low levels of work-family conflict, similar to the findings of MAKOLA et al. [19]. The results showed that the mean scores of the emotional support dimension entries of the operating room nurses were lower than the mean scores of the instrumental support dimension entries, which may be because tertiary care hospitals have relatively better working conditions and environments, with more opportunities for training and faster updating of professional information, and so the nurses felt that the hospitals provided more instrumental support to them, but that the strength of the emotional support was weak. It is suggested that nursing managers should pay more attention to the emotional needs of nurses in the operating room while improving the working environment and providing professional skills training. It is suggested that nursing managers should care more about and encourage nurses, authorize and guide nurses to actively seek growth and self-actualization outside of work, affirm nurses' contributions, and implement a reasonable incentive reward and punishment system, to provide emotional support for nurses [20]; at the same time, they should continue to provide nurses with a wealth of instrumental support to alleviate work-family conflicts among nurses in the operating room.

Relatively high levels of work-family conflict among OR nurses with high scores for work connectivity

The results of this study showed that operating room nurses' work connectivity behavior score was (10.53 ± 1.89) and the stratified regression results showed that work connectivity behavior positively predicted work-family conflict. This is consistent with the results obtained by Park et al. who surveyed employees from various strata and fields [21]. It indicates that with the rapid development of information technology, receiving work information, online business study and assessment, and processing work content during non-work hours have become the norm, and this non-work time work connectivity behavior makes the psychological distance between work and non-work of nurses shortened, and the boundary between work and non-work blurred, which may hinder nurses to detach themselves from work after work, affecting their physical and mental resources' recovery and work life quality [22] thereby exacerbating work-family conflict among nursing staff.

Tips nursing managers should have a comprehensive understanding of non-working time work connectivity, such as online business learning, Tencent classroom and enterprise WeChat, etc., which bring the speed and convenience of learning, but also take up too much of the nurses' rest time, making it difficult to fully obtain the physical and mental resources to recover, rational use of non-working time work-related cell phone frequency, non-working time work connectivity to control in a moderate range, and deepen the employees' sense of belonging to the organization. organization's sense of belonging, so that non-working time work connectivity becomes a way of emotional communication between employees and the organization, thus reducing the level of work-family conflict among nursing staff in the operating room.

Influence of Demographic Characteristics on Work-Family Conflict among Operating Room Nurses

The results of the univariate analysis showed that the differences in work-family conflict scores were statistically significant ($p < 0.05$) when comparing nurses with different personnel relationships, children's status, night shift status, straight-down overtime, and income satisfaction.

In this survey, it was found that 60.78% of the operating room nurses had more than three-night shifts per month, and that night shifts in the operating room were characterized by a high number of emergency, critical, and serious surgeries, a high level of responsibility, and a fast pace. Night shifts also prevent nurses from assuming their roles in the family, which tends to exacerbate work-family conflicts and reduce the quality of family life. As the off-duty time in the operating room is usually undeterminable, nurses who work overtime more than 3 times a week amount to 44.12%,

which makes nurses in the operating room unable to participate in family life promptly, less than the family's understanding and recognition, and aggravates work-family conflict, suggesting that nursing managers should pay attention to nurses with more night shifts and more overtime work in straight down situations, rationally allocate human resources, optimize flexible scheduling patterns, and reduce the work-family conflict arising from night shifts and overtime work. work-family conflict.

The results of this survey also found that OR nurses with higher income satisfaction had lower work-family conflict, which is consistent with the findings of Changrong Chen [23], and may be related to their high welfare benefits and lower financial stress, which can be experienced as a high sense of gain from work and promote work-family gain. Remuneration is the main orientation of work, which can meet the material and security needs of the individual's life, as well as the value of their own work and organizational recognition [24]. Nursing managers are prompted to appropriately improve the treatment of nurses in the operating room and optimize the performance allocation scheme thereby reducing work-family conflict in the nursing population. The work-family conflict scores in the survey results were significantly higher for staffed nurses than for contracted nurses ($P < 0.05$) probably because staffed nurses are treated well, participate in more hospital affairs, have a stable team, and have a greater sense of belonging, suggesting that nursing administrators improve the contracted nurses' treatment of equal pay for equal work and provide nurses with more opportunities to participate in decision making to give full play to their potential and with their subjective initiative, and to stabilize the nurses' team.

The results of the regression analysis showed that the situation of children is an important factor affecting work-family conflict among operating room nurses, and the more children there are, the higher the level of work-family conflict, which is consistent with the findings of Guo Yanan et al. [14]. The reason may be related to the fact that raising children takes a lot of time and energy, and after the two-child policy came into effect, more and more people responded positively, and in addition to completing their work, they also took on family responsibilities such as raising children and caring for them, which led to a more serious work-family conflict, and the nursing managers paid attention to the deployment of nurses, paid more attention to the difficulties of operating room nurses in terms of their work and family, and promoted work-family balance among the nurses of the operating room.

Conclusion and shortcomings

This study's findings indicate that the level of work-family conflict among operating room nurses is substantial, and the sense of organizational support, work connectivity behavior, and

children's situation altogether explained the influencing factors of work-family conflict among operating room nurses. Hospital administrators should pay attention to the effects of different demographic characteristics, sense of organizational support, and psychological detachment levels of operating room nurses on work-family conflict, take targeted management measures to ensure manpower allocation of operating room nurses, rationalize shift scheduling, create a good nursing work environment, and promote the physical and mental health of operating room nurses to alleviate their work-family conflict and improve the quality of nursing care.

This study was conducted only in 1 tertiary-level hospital in Guangzhou City, and different levels of hospitals should be included in the future, so that a multicenter and large-scale study can be conducted at a later stage to further explore the level of work-family conflict, influencing factors, and pathways of action of operating room nurses.

Declaration of Conflict of Interest

I hereby declare that in the process of being involved in [specific matter or decision-making], after careful examination and self-assessment, I confirm that there is no conflict of interest that may affect the impartiality of decision-making. I/Organization promise to maintain an objective and impartial attitude and to comply with all relevant laws, regulations and ethical guidelines when involved in the matter or decision.

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