Resilience and Quality of Work Life of Nurses in Tertiary Hospitals, Guizhou Province, the People's Republic of China*

ความเข้มแข็งทางจิตใจและคุณภาพชีวิตการทำงานของพยาบาล
ในโรงพยาบาลตติยภูมิ มณฑลกุ้ยโจว สาธารณรัฐประชาชนจีน*

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Abstract

Resilience has a positive impact on nurses. High resilience can help nurses better deal with stressful situations, produce better quality nursing care, and better balance work and family life. This descriptive correlational study aimed to explore nurses' resilience and quality of work life, and to investigate the relationships between the two. The participant included 361 nurses working in two tertiary hospitals in Guizhou Province, the People's Republic of China. Research instruments consisted of the Connor Davidson Resilience scale (CD-RISC) and the Work-Related Quality of Life scale (WRQoL). Cronbach's alpha coefficient was used to test the reliabilities of the two questionnaires, which were 0.88 and 0.95. Data were analyzed by using descriptive statistics, and Spearman's rank-order correlation test.

The study found that the level of resilience as perceived by nurses was low (M = 64.6, SD = 14.31) while their perceived level of quality of work life was average (M = 80.43, SD = 11.63). Moreover, there was a strong positive association between their resilience and quality of work life (rs = .69, p < .01).

The results of this study suggest that nursing administrators should improve resilience of nurses by implementing proper strategies so that they can have a better quality of work life.

Keywords: Resilience; Quality of work life; Nurse; Tertiary hospital; The People's Republic of China

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บทคัดย่อ

ความเข้มแข็งทางจิตใจส่งผลทางบวกต่อพยาบาล ความเข้มแข็งทางจิตใจสูงช่วยให้พยาบาลรับมือกับความเครียดได้ดีขึ้น มีคุณภาพการดูแลที่สูง และให้พยาบาลมีความสมดุลในชีวิตการทำงานและครอบครัวได้ดีขึ้น การศึกษาเชิงพรรณนาหาความสัมพันธ์นี้ มีวัตถุประสงค์เพื่อศึกษาความเข้มแข็งทางจิตใจและคุณภาพชีวิตในงานของพยาบาล และทดสอบความสัมพันธ์ระหว่างตัวแปรทั้ง 2 ตัว กลุ่มตัวอย่างประกอบด้วยพยาบาล 361 ราย ที่ทำงานในโรงพยาบาลระดับตติยภูมิสองแห่ง ในมณฑลกุ้ยโจว สาธารณรัฐประชาชนจีน เครื่องมือวิจัย ได้แก่ แบบวัดความเข้มแข็งทางจิตใจของคอนเนอร์-เดวิดสัน และแบบวัดคุณภาพชีวิตการทำงาน ค่าความเชื่อมั่นของเครื่องมือ ได้ค่า Cronbach's alpha coefficient ของแบบสอบถามทั้งสองฉบับ เท่ากับ 0.88 และ 0.95 ตามลำดับ วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา และสถิติ Spearman's rank-order correlation

ผลการวิจัยพบว่า ระดับความเข้มแข็งทางจิตใจตามการรับรู้ของพยาบาลอยู่ในระดับต่ำ (M = 64.6, SD = 14.31) ขณะที่ระดับคุณภาพชีวิตการทำงานตามการรับรู้ของพยาบาลอยู่ในระดับปานกลาง (M = 80.43, SD =11.63) และมีความสัมพันธ์เชิงบวกในระดับสูงระหว่างความเข้มแข็งทางจิตใจและคุณภาพชีวิตในงาน (r_s = .69, p < .01)

ผลการศึกษานี้ให้ข้อเสนอแนะว่า ผู้บริหารพยาบาลควรพัฒนาความเข้มแข็งทางจิตใจของพยาบาล โดยใช้กลยุทธ์ที่เหมาะสม เพื่อให้พยาบาลมีคุณภาพชีวิตการทำงานดียิ่งขึ้น

คำสำคัญ: ความเข้มแข็งทางจิตใจ คุณภาพชีวิตในงาน พยาบาล โรงพยาบาลตติยภูมิ สาธารณรัฐประชาชนจีน

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Background and significance

The majority of health professionals are nurses, and they play a pivotal role in healthcare. Nurses comprise half the global health workforce (Drennan & Ross, 2019). However, in 2014, the World Health Organization (WHO) and the World Bank calculated a global shortage of nine million nurses and midwives, predicting this would be reduced to 7.6 million by 2030. Factors affecting global nursing shortages include the state of the labor market, political stability, nurse status, nurses career progression, working conditions, location, nurse income levels, high levels of stress and burnout, job dissatisfaction, and low commitment (Drennan & Ross, 2019). Due to its large land mass, large population, and lack of retention in nursing, China's nursing shortage is more severe than in most developed countries and is getting worse (Wang et al., 2016).

Increasingly, quality of work life has been highlighted as having a substantial impact on nurses, globally, particularly when there are severe nursing shortages and the quality and safety of nursing care is under scrutiny. Based on Van Laar et al. (2007), quality of work life refers to a broad multidimensional construct that captures an individual's perception of work experience which incorporates work-based satisfaction factors, as well as life satisfaction and general feelings of wellbeing. Quality of work life not only promotes employee performance and reduces absenteeism, workplace accidents, and job turnover, but also increases job satisfaction and satisfaction with other aspects of life. Quality of work life promotes employee productivity, working with enthusiasm, and loyalty to the organization (Moradi et al., 2014). General well-being, stress at work, job and career satisfaction, home-work interface, control at work, and working conditions are the six primary factors that influence the quality of work life (Van Laar et al., 2007).

In recent years, research has supported the relationship between resilience and quality of work life in China, including studies demonstrating a significant correlation between resilience and quality of work life among ICU nurses (Zhang, 2020; Zhu et al., 2020); operating room nurses (Qin et al., 2020); emergency nurses (Yin et al., 2017); and obstetric nurses (Hu et al., 2021). Moreover, one study showed that a factor influencing the character of nurses' quality of work life is their resilience, in one hospital in Henan Province, China after the COVID-19 outbreak (Wang, 2021). It is apparent that these investigations have been done for specific departmental nurses. Only one study focuses on the overall nursing staff in a hospital, but the research background was after the COVID-19 outbreak, and the exploration was limited to a single hospital, which had several limitations.

Resilience has been designated as essential to boosting the quality of care and sustaining the health care workforce (Manomenidis et al., 2019). It has been shown that resilience benefits both individual and organizational outputs, enhancing nurses' professional skills, and improving job and life satisfaction (Çam & Büyükbayram, 2017). Resilience refers to the personal qualities that enable one to thrive in the face of adversity, and can also be viewed as a measure of successful stress coping ability (Connor & Davidson, 2003).

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Guizhou province, located in southwest China, has a total population of 38.58 million people (Guizhou Provincial Bureau of Statistics, 2024). As an underdeveloped Chinese province, Guizhou experiences uneven allocation of medical resources, which creates enormous rural-urban disparities. Eighty percent of the existing health care resources in Guizhou Province, including the highest-grade hospitals (i.e., tertiary general hospitals), are concentrated in large modern cities such as the provincial capital, Guiyang City (Li et al., 2020). The concentration of medical resources causes nurses in tertiary general hospitals to face increased stress at work, decreased job satisfaction, difficulty balancing work and family, and effects on working conditions. In addition, according to the job requirements of responsible holistic nursing care, each nurse takes care of at least 7-8 patients per shift. Compared with other countries, the nurse-patient ratios in both the United States and Australia are 1 to 4 (Yang et al., 2016). Generally, nurses face more stress at work, which affects general well-being and control over one's work. Based on the current situation, nurses in grade-A tertiary hospitals in Guizhou province face different types of adversity at work as well as some unpleasantness related to quality of work life.

Although some studies have been done in China on the relationship between quality of work life and resilience, the current studies are all aimed at nurses in a specific department (Hu et al., 2021; Qin et al., 2020; Yin et al., 2017; Zhang, 2020; Zhu et al., 2020). Therefore, there is a gap regarding studies on the resilience and quality of work life of nurses in different hospital departments, as a whole. Because the levels of quality of work life and resilience can differ in different contexts and in different areas of China, researchers should consider the levels of quality of work life and resilience in specific areas. The outcomes of this study can help nursing managers and administrators by providing fundamental knowledge and evidence in assisting analysis and design of jobs, with the goal of enhancing organizational effectiveness and efficiency. Additionally, they provide guidance for improving Chinese nurses' resilience and enhancing Chinese nurses' quality of work life which can cultivate well-being, satisfaction, and contentment at their workplace.

Research objectives

1. To explore the resilience and quality of work life of nurses employed at tertiary hospitals, Guizhou Province, the People's Republic of China.

2. To investigate the relationship between resilience and quality of work life of nurses employed at tertiary hospitals, Guizhou Province, the People's Republic of China.

Conceptual framework

For this study, the concept of resilience was derived from Richardson (2002), in which resilience is defined as the personal qualities that enable one to thrive in the face of adversity, which can also be viewed as the process and outcome of successful stress-coping ability. Resilience contains five components: personal competence, strengthening effects of stress, positive acceptance of change, control, and spiritual influences. The definition of quality of work

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life was derived from Van Laar et al. (2007) who defined it as a broad multidimensional construct that captures an individual's perception of work experience, which includes work-based satisfaction factors as well as general life satisfaction and feelings of well-being. It has six dimensions: control at work; general well-being; work conditions; job and career satisfaction; stress at work; and home-work interference.

According to the literature review (Qin et al., 2020; Yin et al., 2017; Zhang, 2020; Zhu et al., 2020), resilience is correlated with general well-being, home-work interface (work-life balance), job satisfaction, control at work, work conditions, and stress at work. For nurses who have a stronger sense of power and adherence to the goal when facing adversity; a higher tolerance for negative effects; a higher level of calm when coping with stress; a higher acceptance of change; better control over achieving goals and obtaining assistance from outside; and more spiritual influences, their ability to successfully cope with stress will be stronger. As a result, this stronger ability to successfully cope with stress means that nurses have better general well-being and higher job/career satisfaction, in addition to enhanced ability to face different work conditions and to cope with stress, while also experiencing greater control at work and an improved home-work interface. In conclusion, nurses with high resilience will have a higher quality of working life. Therefore, this study tested the relationship between resilience and quality of work life among nurses.

Methods

Population and sample

Registered nurses were recruited by stratified randomization and simple random sampling at two tertiary hospitals in Guiyang, the provincial capital of Guizhou province. Those who had worked in the clinical departments for more than one year were selected.

The sample size for this study was calculated as 338 according to Yamane's formula (1973). Considering an approximately 20% loss in the sample acquisition process, the final sample size was targeted to be 406. The percentage of those who responded was 390 (96.06%), and 361 (88.92%) of the questionnaires were filled out completely for the data analysis.

Research instruments

1. Demographic Questionnaire

The researcher devised the questions for the demographic data form, which included information on hospital, department, marital status, age, gender, level of education, professional title, single child, years of work experience, and work shift.

2. Chinese version of the Connor Davidson Resilience Scale (CD-RISC)

The researcher was allowed to use the CD-RISC (including the Chinese version) and obtained permission for its use along with related materials. Connor and Davidson (2003) developed the CD-RISC which consists of five components and contains a total of 25 items using a scale with five points: 0 indicates *not true at all,* 1 indicates *rarely true,* 2 indicates *sometimes true,* 3

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indicates *often true, and* 4 indicates *almost true nearly all the time*. The overall rating ranges from 0 to 100, with more points implying more resilience. According to the latest Connor-Davidson Resilience Scale (CD-RISC) Manual, The CD-RISC-25 score for the general population was based on data from the U.S. population in which the average score was 79.0 (SD = 12.9) (Davidson, 2020). The score for this study was compared with the results of previous studies and the mean score of 79.0 from the general US general population.

The psychometric properties of the Chinese version for the resilience instrument, CD-RISC, were examined by Yu and Zhang (2007), and proved satisfactory due to the actual data matching the expected correlation between resilience measure and the variables in the factor analysis study. As the researcher used the Chinese version of instrument without any modification, the validity was not tested. Based on Polit (2010), a Cronbach's alpha reliability of at least 0.80 was deemed acceptable for both measurements in this study. The Cronbach's alpha coefficient for the Connor Davidson Resilience scale was 0.88.

3. Chinese version of Work-Related Quality of Life (WRQoL)

The researcher first sent an email to Professor Van Laar to apply for authorization to use the Work-Related Quality of Life scale (including the Mandarin Chinese version) and obtained this permission from Professor Van Laar. The Work-Related Quality of Life (WRQoL) Scale by Van Laar et al. (2007) was utilized for this study. It consists of six-dimension subscales, containing a total of 24 items with 5-point Likert-scaled questions, ranked 1 (strongly disagree) to 5 (strongly agree). However, the last item is an independent item in which employees make an overall evaluation of their work-related quality of life. Van Laar et al. (2007) has mentioned that the overall evaluation should be reported independently of the subscales. The possible scores ranged from 23 to 115, with higher scores indicating a higher quality of work life. The level of quality of work life was categorized into three levels.

Level	Overall QoWL	GWB	HWI	JCS	CAW	WCS	SAW
Low	23-73	6-18	3-9	6-18	3-9	3-10	8-10
Average	74-84	19-23	10-11	19-22	10-11	11	6-7
High	85-115	24-30	12-15	23-30	12-15	12-15	2-5

The validity of the WRQoL was tested by Van Laar et al. (2007). The participants in this study are similar to those in Van Laar et al.'s research. Therefore, in this study, validity was not tested. The Cronbach's alpha coefficient of the overall (total) and the various dimensions of the Work-Related Quality of Life scale, including general well-being, home-work interface, job career

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satisfaction, control at work, working conditions, and stress at work, were 0.95, 0.89, 0.89, 0.82, 0.81, 0.85, and 0.87, respectively.

Ethical considerations

The study protocol was approved by the Research Ethics Review Committee, the Faculty of Nursing, Chiang Mai University, Thailand (No.035/2022) and the Research and Ethics Committee of Guizhou Medical University (No. 239/2022). All participants volunteered to take part in the study and were free to withdraw from the study at any time. All participants voluntarily signed the informed consent prior to data collection. The information collected from each participant during the study was kept confidential and anonymous.

Data collection

The data was obtained from two Grade-A tertiary hospitals in Guizhou province. Upon receiving permission from the Research Ethics Review Committee, the study was conducted. After receiving permission to collect data at the two hospitals, the researcher asked for two coordinators from the target hospitals to help distribute and collect the questionnaires. The researcher then checked the completeness of all returned questionnaires before data analysis. The total number of questionnaires distributed to the sample of nurses was 406. The percentage of those who responded was 96.06% (390), and 361 (88.92%) of the survey questionnaires were completely filled out for the purpose of data analysis.

Data analysis

Data analysis was performed at a significance level of (0.05). The Statistical Package software (23.0) was used to generate descriptive and inferential statistics. Spearman's correlation test was utilized to determine the relationship between resilience and quality of work life of nurses in tertiary hospitals in Guizhou Province, China (Polit, 2010).

Results

Demographic data

This study included 361 nurses who worked at two tertiary hospitals in Guiyang, Guizhou Province. Most (93.35%) were female with ages ranging between 21-55 years old (M = 31.65, SD = 5.81). Most nurses were between the ages of 26 and 30 (35.73%), and the majority were married (64.82%). More than half also (79.78%) held a bachelor's degree, but only 5.26% held a master's degree. Furthermore, 14.40% of participants were working in the medical department, and an equal proportion came from the surgical department and pediatric department (13.02%). The majority were in-charge nurses (45.98%), and 36.01% were senior nurses. In addition, 69.53% of them had work experience of less than 10 years. The average number of years that participants had been working as a nurse was 8.98 years (SD = 6.352). The majority of nurses had a rotating shift (70.91%). Also, 68.42% were not the single child in their family.

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Resilience

The overall mean score for perceived resilience of the nurses was 64.60 (SD = 14.31). The mean scores for the five elements, including personal competence, strengthening effects of stress, positive acceptance of change, control, and spiritual influences, were as follows: 20.95 (SD = 5.23), 17.30 (SD = 4.19), 13.56 (SD = 3.17), 7.98 (SD = 2.02), and 4.81 (SD = 1.53), respectively (Table 1).

Table 1 Minimum, Maximum, Mean of Sum, and Standard Deviation of Resilience of the Nurses (n = 361)

Resilience	Items	Minimum	Maximum	Mean of Sum	SD
Total	25	30	100	64.60	14.31
Personal competence	8	9	32	20.95	5.23
Strengthening effects of stress	7	9	28	17.30	4.19
Positive acceptance of change	5	0	20	13.56	3.17
Control	3	3	12	7.98	2.02
Spiritual influences	2	0	8	4.81	1.53

Quality of working life

The overall mean score for nurses' perceptions of their quality of work life was at an average level (80.43, SD = 11.63). The four dimensions of quality of work life, general well-being, home-work interface, job career satisfaction, and stress at work were at average levels (M with SD) of 20.84 (SD = 3.20); 10.84 (SD = 2.01); 21.53 (SD = 3.52); and 6.64 (SD = 1.44), respectively. The other two dimensions, working conditions and control at work, were perceived to be low (M with SD) of 10.88 (SD = 1.91), and 9.70 (SD = 2.38), respectively (Table 2).

Table 2 Levels of quality of working life (n = 361)

Quality of Working Life	Minimum	Maximum	Mean of Sum	SD	Level
Overall	23.00	115.00	80.43	11.63	Average
Dimensions of QoWL					
GWB	6.00	30.00	20.84	3.20	Average
HWI	3.00	15.00	10.84	2.01	Average
JCS	6.00	30.00	21.53	3.52	Average
CAW	3.00	15.00	9.70	2.38	Low
WCS	3.00	15.00	10.88	1.91	Low
SAW	2.00	10.00	6.64	1.44	Average

Note. GWB = general well-being, HWI = home-work interface, JCS = job and career satisfaction, CAW = control at work, WCS = working conditions, SAW = stress at work.

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The relationship between overall resilience and quality of working life

The results of this study illustrated that there was a strong positive association between resilience and quality of work life among nurses (r_s = .69, p < .01) (Table 3).

Table 3 The relationship between overall resilience and quality of work life (n = 361)

	Quality of work life	r_s	P value
	GWB	.51**	0.00
	HWI	.55**	0.00
	JCS	.69**	0.00
Resilience	CAW	.57**	0.00
	WCS	.55**	0.00
	SAW	.06	0.26
	Overall	.69**	0.00

Note. GWB = general well-being, HWI = home-work interface, JCS = job and career satisfaction, CAW = control at work, WCS = working conditions, SAW = stress at work.

** The correlation is significant at the 0.01 level.

Discussion

The results of this study have shown that the participants' mean score for resilience was 64.60 (SD = 14.31). Compared with Connor and Davidson's validation research, this result was lower than the U.S. general community samples which reported a mean score of 79 (SD = 12.9) (Davidson, 2020). According to Mealer et al. (2012), a mean score of more than 92 is defined as a positive score for being highly resilient. The result of this study revealed a lower resilience score, indicating that Chinese nurses have lower successful stress coping ability.

The results of this study were in line with those of other Chinese with summarized resilience mean scores ranging from 55.71 to 63.87 (SD = 12.96-22.10) (Huang et al., 2020; Shen, 2022; Xu et al., 2019; Yang et al., 2021; Yang et al., 2023; Zhao & Chen, 2018). One possible explanation may be because of the similar culture among Chinese nurses. Nowadays, nurses in China still face countless problems such as nursing shortages, low professional social status, low professional identity, too much work pressure, nurse-patient relationship conflict, and low career satisfaction (Xue et al., 2019). This situation may influence nurses' resilience to cope with stress successfully. Another possible reason is that nurses may lack resilience traits such as goal commitment, emotional tolerance, stress management, adaptability, openness to support, and spiritual strength. These factors can reduce their ability to cope successfully with stress and overcome adversity.

Additionally, previous research has shown that nurses aged 40 and older are three times more likely to report moderate/high levels of resilience than those aged 27 and younger (Ang et al., 2018). Older nurses handle workplace stress better than their younger counterparts and adapt more effectively to the continual changes in resilience characteristics. Moreover, Ang et al. (2018)

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showed that a longer period of work experience results in higher resilience. In this study, most nurses (35.73%) were aged between 26-30 years old, and 69.53% had been working for less than 10 years, which indicated that nurses might have lower resilience. In Liaoning Province, China, nurses who were only children had higher resilience than those with siblings. This may be due to better family resources, supportive environments, and democratic parenting (Su et al., 2013). In this study, 68.42% of participants were non-only children, suggesting lower stress coping ability among this group.

The overall quality of work life as perceived by the nurses from two tertiary hospitals in Guizhou Province was average (M = 80.43, SD = 11.63), indicating that nurses in tertiary hospitals are not very satisfied with their quality of work life. This finding was in line with those from earlier studies conducted by Abbasi et al. (2017) conducted in Iran, and McFadden et al. (2021), conducted in the UK. However, the results of this study differed from those of another international study by Said et al. (2015) using the same instrument, which reported a low level of quality of work life. Moreover, this finding is higher than two other studies in its exploration with the quality of work life among nurses in China (Feng et al., 2012; Xu, 2011).

The data from Table 2 reveals that nurses rated their levels of general well-being (GWB) (M = 20.84, SD = 3.20), home-work interface (HWI) (M = 10.84, SD = 2.01), job and career satisfaction (JCS) (M = 21.53, SD = 3.52), and stress at work (SAW) (M = 6.64, SD = 1.44) as average. However, their perceptions of their working conditions (WCS) (M = 10.88, SD = 1.91) and control over their work (CAW) (M = 9.70, SD = 2.38) are notably lower, indicating a less satisfactory view of these aspects. Upon closer examination of the individual items within these constructs, it becomes evident that factors such as workload, interpersonal dynamics, career advancement opportunities, and support from colleagues and superiors contribute significantly to these perceptions.

One possible explanation for these average perceptions could be the diverse ways of living, different working environments (different level of hospitals), and different experience of nurses across different regions of China. These regional variations could lead to differences in availability of resources, organizational cultures, and socio-economic conditions, influencing how nurses perceive their quality of work life (QOWL). Additionally, the inherent challenges within the nursing profession, including high stress levels, demanding workloads, and limited autonomy, may contribute to the overall average perception of QOWL among nurses.

Furthermore, the disparity between the perceived levels of WCS and CAW compared to other aspects suggested areas that may require attention and improvement within the work environment. Addressing issues related to working conditions, such as workload management and providing adequate resources, as well as enhancing nurses' sense of control over their work, could potentially lead to improvements in their overall QOWL.

The study showed resilience had strongly positive relationships with general wellbeing (r_s = .51, p < .01) and home-work interface (r_s = .55, p < .01). This study's findings correspond with

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those of previous research (Qin et al., 2020; Zhang 2020; Zhu et al., 2020) in China. This result showed that nurses with higher resilience feel satisfied with their general feelings of happiness and life satisfaction and experience greater harmony between home and work. Besides, there existed a strongly correlation between resilience and job career satisfaction (r_s = .69, p < .01). The outcome was in line with earlier findings by Zhang (2020) showing that when nurses had high job satisfaction, they had high resilience, among ICU nurses in tertiary hospitals in China (r_s = .609, p < .01). One possible reason is nurses who have higher successful stress coping ability can be positive about accepting change and obtaining assistance from outside. They can overcome difficulties at work, establish healthy lifestyles, obtain high job career satisfaction, and better balance work and family.

In addition, this study found that resilience had a strongly positive relationship with general control at work (r_s = .57, p < .01) and working conditions (r_s = .55, p < .01). This result was in line with previous studies by Qin et al. (2020) and Zhu et al. (2020), in China. However, in a study conducted in Portugal during the COVID-19 pandemic, Cholsakhon (2022) found that resilience and control at work, resilience and work conditions among pediatric nurses exhibited no statistically significant correlation (p > .05). This discrepancy may be due to the COVID-19 pandemic and different national conditions.

Moreover, there was no statistically significant connection between resilience and stress at work in the current study (p > .05). This is possibly attributable to the varying levels of stress encountered by nurses in various hospital departments. The result was in line with previous studies by Cholsakhon (2022) and Yin et al. (2017), the latter which showed that, among 209 emergency nurses in Jiangsu Province, there was no statistically significant association between resilience and stress at work (p > .05). However, Zhu et al. (2020) showed that there appears to be an opposite relationship between resilience and stress at work among ICU nurses (r_s = -.185, p < .05). This means that if ICU nurses had high resilience, they had low stress at work. ICU nurses often face critically ill patients and need to maintain a high degree of concentration at all times, experiencing more emergencies than general departments, resulting in excessive psychological burden, and high work pressure. ICU nurses' high resilience can help them to better deal with high work pressure in their daily routine so as to provide better nursing care for patients.

In conclusion, this study showed that resilience had a strong positive relationship with quality of work life (r_s = .69, p < .01), a result which was in line with previous studies by Hu et al. (2021); Qin et al. (2020); Yin et al. (2017); Zhang (2020); and Zhu (2020). This means that nurses who have better personal qualities that enable them to thrive in the face of adversity, and better ability to successfully cope with stress, will have a better perception of the work experience based on job satisfaction factors, as well as life satisfaction and general well-being so that their quality of work life will be better.

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Application of research findings

This study offers several implications regarding nursing practice and policy. At the individual level, having strong resilience is important and necessary for nurses, to cope with stress, difficulties, and challenges during their work. Nurses with higher resilience will have a better quality of work life and enhanced well-being.

At the organizational level, nursing administrators and managers should improve nurses' resilience by initiating appropriate strategies, such as helping nurses deal with stressful situations in their work, providing supportive collegial relationships to improve nurses' tolerance for coping with stress, providing training for nurses so they understand how to improve their anti-stress abilities, and developing programs to enhance nurses' problem-solving skills. Meanwhile, nursing administrators and managers should encourage nurses to express their opinions, and to participate in some aspects of decision making. In addition, they should create safe and satisfactory working environments, helping nurses balance family and work, as well as improving their job/career satisfaction which will assist nurses in handling workplace stress, consequently enhancing the quality of their work life. Moreover, the results of this study indicate the necessity of nursing managers and administrators undertaking proper strategies for improving nurses' resilience, thereby increasing their quality of work life.

Suggestions for further research

Several limitations of this study require attention. For example, this study was limited to tertiary hospitals in Guizhou Province, China. Further research is needed to be carried out to expand this study in other regions or in other types of hospitals in China and then benchmarking the results. Also, this study focused on only one variable; future research could be conducted to explore several factors related to quality of work life. Meanwhile, future research should be conducted with other populations, such as head nurses and nursing students, and similarly, benchmarking the results. Moreover, this study's outcomes offer just a fundamental comprehension of resilience and quality of work life for hospital nurses in China; therefore, additional research is required, for example, a predictive analysis on factors that influence resilience and quality of work life. In addition, an intervention study could be conducted to uncover strategies for promoting resilience in order to improve the quality of work life for registered nurses working in tertiary hospitals.

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