



# Stressors, coping styles, and anxiety & depression in pediatric nurses with different lengths of service in six tertiary hospitals in Chengdu, China

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**Background:** The level of stress experienced by nurses is related to their length of service. In the current study, we investigated the potential correlations among stressors, coping styles, and anxiety and depression in pediatric nurses with different lengths of service in six tertiary hospitals in Chengdu, Sichuan, China.

**Methods:** Between January and June 2018, we enrolled 500 pediatric nurses from 6 tertiary hospitals in Chengdu using a convenience sampling method. A cross-sectional survey was carried out using the Chinese Nurses' Occupational Stressor Scale (NOSS), the Simplified Coping Style Questionnaire (SCSQ), and Zung's Self-rating Anxiety Scale (SAS) and Self-rating Depression Scale (SDS).

**Results:** Statistically significant differences were found in the average scores of NOSS and scores of various dimensions, SAS and SDS, and Simple Coping Style score among pediatric nurses with different lengths of service (all  $P < 0.05$ ). Nurses with 8–12 years of service had the highest average score for stressors. Anxiety and depression were both prevalent among nurses with 4–7 years of service. The average overall stress scores of nurses with different lengths of service were negatively correlated with positive coping style ( $P < 0.05$ ), were not significantly correlated with negative coping style ( $P > 0.05$ ), and were positively correlated with anxiety score and depression score ( $P < 0.05$ ). The positive coping style score showed negative correlations with anxiety score and depression score (both  $P < 0.05$ ). The negative coping style score was positively correlated with the scores for anxiety and depression (all  $P < 0.05$ ), except in nurses with 4–7 years of service, for whom the negative coping style score showed no significant correlation with the depression score.

**Conclusions:** Pediatric nurses with different lengths of service in tertiary hospitals in Chengdu experience different levels of workplace stress. Pediatric nurses with 4–7 and 8–12 years of service have higher levels of workplace stress and are more likely to experience anxiety and depression.

**Keywords:** Pediatric nurses; length of service; stressors; coping styles; anxiety; depression.

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## Introduction

Workplace stress is prevalent among nurses (1). Rapid transformation of Biomedical model, competitive healthcare markets, and continuously increasing needs and awareness of rights among patients present huge challenges for nursing professionals. For reasons including the working style and environment, family expectations, and social concerns associated with treating child patients (2,3), even there is a high incidence of violence in the workplace (4). Pediatric nurses are especially susceptible to workplace stress and mental health problems than nurses in other wards (3), such as internal medicine, surgery and emergency departments (5). Empirical evidence has shown that occupational stress can be reduced (6). A variety of coping styles or strategies can be adopted to help nurses to deal with stress and its influencing factors. Coping strategies can eliminate negative emotions, thereby protecting the individual's physical and psychological health (7). Coping style is an intermediary mechanism that regulates stress and mental health. The manner in which an individual copes with stress is critical to their psychological state. Positive coping styles are conducive to enhancing the psychological adaptability of nurses, while negative coping styles exacerbate burnout, resulting in a poor emotional state (8–10). The research showed that the positive and negative coping styles of pediatric nurses in grade III hospitals were higher than those in grade II hospitals, indicating that pediatric nurses in grade III hospitals adopted more positive coping styles and more negative coping styles when facing difficulties (11).

Studies have shown that the stress experienced by nurses is related to their length of service (2,12); however, few articles have explored stressors among pediatric nurses with different lengths of service. Therefore, we conducted a cross-sectional survey among pediatric nurses in six tertiary hospitals in Chengdu, Sichuan, China, in an attempt to identify the stressors, coping styles, and anxiety and depression among pediatric nurses with different lengths of service, to assist the development of effective measures for stress relief in pediatric nurses, and to improve the quality and performance pediatric nursing services. We present the following article in accordance with the SURGE reporting checklist (available at <http://dx.doi.org/10.21037/tp-20-439>).

## Methods

### Subjects

Between January and June 2018, we performed a cross-

sectional survey of nurses working in pediatric wards in 2 children's hospitals and 4 general hospitals in Chengdu using a convenience sampling method. The inclusion criteria for participants were as follows: licensed as a nurse practitioner; (II) working in clinical setting; and (III) participating in the survey voluntarily. Nurses who were on leave or who submitted their resignation during the survey were excluded. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by ethics board of Chengdu Women and Children Center Hospital and informed consent was taken from all individual participants.

### Research methods

A questionnaire-based survey was conducted. The survey tools employed included: (I) a general information form. Items on the self-designed form included the participant's gender, age, marital status, education, income, professional title, employment status, number of night shifts, length of service, and the situation of the participant's children. (II) The Chinese Nurses' Occupational Stressor Scale (NOSS) enveloped by Li *et al.* (13). The scale comprises 35 items across 5 dimensions: nursing profession and job, time allocation and workload, work environment and resources, patient nursing and management, and interpersonal relationships. Stress rates on a 4-point Likert scale, from 1 point (low stress) to 4 points (high stress). The test-retest correlations of these 5 dimensions ranges from 0.71–0.86, and the test-retest correlation of the entire scale is 0.79 (14). (III) Simple Coping Style Scale: The Simplified Coping Style Questionnaire (SCSQ) developed by Xie *et al.* (15). The scale consists of 20 items in 2 dimensions: positive coping style (items 1 to 12) and negative coping style (items 13 to 20), which were rated using a 4-point (0–3 points) scoring system. The higher the positive coping style score, the milder the participant's mental problems and symptoms, and the higher the negative coping style score, the more severe the participant's mental problems and symptoms. The content validity index (CVI) of the scale is 0.89, and the Cronbach's  $\alpha$  coefficient is 0.90 (2). Zung's Self-rating Anxiety Scale (SAS) (16) and Self-rating Depression Scale (SDS) (17). Each scale includes 20 items, with each item scored on a scale of 1–4 (1–4 points). The standard score is calculated by multiplying the total score by 1.25. The cutoff values of the SAS and SDS standard scores are 50 points and 53 points, respectively. A score below the cut-off value is considered to indicate an absence of anxiety or depression

**Table 1** General information of 500 pediatric nurses

Item	Group	Number of respondents	Proportion (%)
Age (years)	>25	152	30.4
	26–30	187	37.4
	31–35	58	11.6
	≥36	103	20.6
Years of service in pediatric department (years)	≤3	180	36.0
	4–7	172	34.4
	8–12	58	11.6
	≥13	90	18.0
Education background	Technical secondary school	24	4.8
	Junior college	260	52.0
	Undergraduate	213	42.6
	Master	3	0.6
Professional title	Nurse	208	41.6
	Senior nurse	209	41.8
	Nurse supervisor	76	15.2
	Deputy director	7	1.4
Siblings	None	260	52.0
	Yes	240	48.0
Job category	Daytime shift nurse	213	42.6
	Night shift nurse	287	57.4
Gender	Male	1	0.2
	Female	499	99.8

symptoms, while a higher score denotes a more severe mental problem.

### Survey methods

After the permission of the nursing departments of the six hospitals had been obtained, the investigators distributed the questionnaire forms to the participants on the day of the survey. The purpose, content, and filling method of the questionnaire was explained to the survey participants before the investigation. Informed consent was obtained from the participants, who filled out the questionnaire independently and then submitted it to the investigator. The questionnaire recovery rate was 100% (531 of

531). Questionnaires that were incomplete or invalid were excluded, including those with >20% of questions with missing answers or answers with obvious reaction tendencies. Finally, effective responses were obtained from 500 subjects (effective response rate: 94.16%).

### Statistical analysis

Statistical analyses were performed using SPSS 20.0 software (IBM, USA). Count data were expressed using proportions, and measurement data were presented using  $\bar{x} \pm$  standard deviation (SD). Analysis of variance (ANOVA) was performed for inter-group comparisons. The NOSS, SCSQ, and SAS/SDS scores were analyzed using Spearman's correlation analysis.  $P < 0.05$  was considered to be statistically significant.

## Results

### General data of survey participants

In total, 500 pediatric nurses were included in the final analysis. Their general information is summarized in *Table 1*.

### Stressors of pediatric nurses with different lengths of service

Statistically significant differences existed among nurses with different lengths of service in terms of the average scores of nurses' stressors and the scores of five different various dimensions from the NOSS (all  $P < 0.05$ ). Nurses with 8–12 years of service had the highest average score for stressors (*Table 2*).

### Comparisons of anxiety & depression and coping style scores among pediatric nurses with different lengths of service

As shown in *Table 3*, the scores for anxiety and depression significantly differed among pediatric nurses with different lengths of service, as did the Simple Coping Style Scale score (all  $P < 0.05$ ).

### Comparisons of the proportions of anxiety & depression among pediatric nurses with different lengths of service

A total of 481 questionnaires were eligible for the analysis of anxiety score, 475 questionnaires for the analysis of depression score, and 456 questionnaires for the analysis of

**Table 2** Comparison of average scores for stressors among pediatric nurses with different lengths of service

Item	Nursing profession and job	Time allocation and workload	Work environment and resources	Patient nursing and management	Interpersonal relationships	Total stress	Order of total stress
≤3 years	2.40±0.63	2.56±0.73	2.42±0.79	2.63±0.63	2.00±0.75	2.35±0.57	4
4–7 years	2.47±0.62	2.95±0.73 <sup>a</sup>	2.72±0.80 <sup>a</sup>	2.79±0.62	2.10±0.71	2.51±0.60 <sup>a</sup>	2
8–12 years	2.46±0.64	2.89±0.76 <sup>a</sup>	2.79±0.77 <sup>a</sup>	2.59±0.60	2.41±0.77 <sup>ab</sup>	2.53±0.56	1
≥13 years	2.24±0.65 <sup>b</sup>	2.88±0.79 <sup>a</sup>	2.81±0.85 <sup>a</sup>	2.56±0.66 <sup>b</sup>	2.02±0.65 <sup>c</sup>	2.35±0.60	3
Total sample	2.40±0.64	2.79±0.76	2.64±0.82	2.67±0.63	2.09±0.73	2.43±0.59	
F value	2.705	8.807	7.038	3.224	4.796	3.418	
P value	0.045	0.000	0.000	0.018	0.003	0.017	

<sup>a</sup>, P<0.05, compared with ≤3 years group; <sup>b</sup>, P<0.05, compared with 4–7 years group; <sup>c</sup>, P<0.05, compared with 8–12 years group.

**Table 3** Comparisons of anxiety & depression scores and Simple Coping Style Scale score among pediatric nurses with different lengths of service

Item	Positive coping score	Negative coping score	Anxiety score	Depression score
≤3 years	24.23±6.39	9.28±3.92	39.74±10.17	42.67±10.08
4–7 years	22.31±6.82 <sup>a</sup>	10.43±4.15 <sup>a</sup>	42.92±10.43 <sup>a</sup>	45.82±10.41 <sup>a</sup>
8–12 years	23.48±6.66	11.80±4.57 <sup>a</sup>	43.46±12.57	44.44±11.81
≥13 years	24.99±6.30 <sup>b</sup>	11.57±4.22 <sup>a</sup>	39.88±9.86	41.31±9.80 <sup>b</sup>
Total sample	23.61±6.62	10.37±4.23	41.30±10.61	43.72±10.47
F value	3.999	8.969	3.898	4.471
P value	0.008	0.000	0.009	0.004

<sup>a</sup>, P<0.05, compared with ≤3 years group; <sup>b</sup>, P<0.05, compared with 4–7 years group.

both scores. The proportions of both anxiety and depression were high among nurses with 4–7 years of service and differed significantly from the proportions in the ≤3 years' service group and ≥13 years' service group (both P<0.05; *Figure 1*).

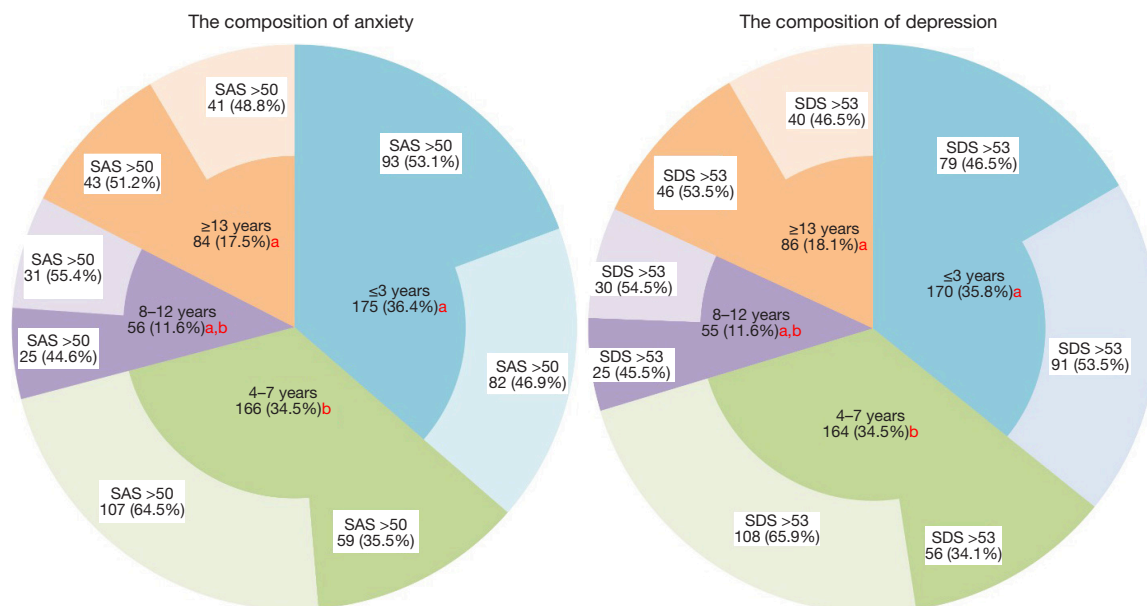
#### **Correlations among stressors, coping style, and anxiety & depression in pediatric nurses**

The average total stress scores of nurses with different lengths of service were negatively correlated with positive coping style (P<0.05) and were not significantly correlated with negative coping style (P>0.05); however, they did show a positive correlation with anxiety score and depression score (P<0.05). The positive coping style score was negatively correlated with the anxiety score and depression score (both P<0.05). The negative coping style score was positively correlated with the anxiety and depression scores, except in nurses with 4–7 years of service, for whom

the negative coping style score showed no significant correlation with the depression score (all P<0.05) (*Table 4*).

#### **Discussion**

Workplace stress is a reaction that occurs when demands are placed on workers to meet job requirements that do not match their knowledge, skills, or abilities, which challenges their coping capabilities (18). Many factors can affect an individual's workplace stress levels, including personal cognitive evaluation, personality, and previous physical and mental experience. In addition, some literatures also proposed, mineralocorticoid receptors (MR) would also be important in stress coping, adaptation and depression (19,20). We believe this is because MR can be seen as one of nature's tools to effectively coordinate the appraisal of and coping with changes in our environment (21–23). Nurses have poorer mental health than the general population (24). In particular, anxiety and depression are commonly reported



**Figure 1** Comparisons of the proportions of anxiety & depression among pediatric nurses with different lengths of service. There is no statistically significant difference between a and a, between a/b and a, or between b and a/b, whereas the difference between a and b is statistically significant.  $\chi^2=11.853$  for anxiety ( $P<0.05$ );  $\chi^2=4.029$  for depression ( $P<0.05$ ).

**Table 4** Correlations among stressors, coping style, and anxiety & depression scores in pediatric nurses (r value)

Length of service	Item	Positive coping score	Negative coping score	Anxiety score	Depression score
≤3 years	Average total stress score	-0.185	0.14 <sup>a</sup>	0.396	0.370
	Positive coping score	-	-	-0.427	-0.529
	Negative coping score	-	-	0.289	0.235
4-7 years	Average total stress score	-0.162	0.066 <sup>a</sup>	0.513	0.455
	Positive coping score	-	-	-0.389	-0.558
	Negative coping score	-	-	0.178	0.063 <sup>a</sup>
8-12 years	Average total stress score	-0.152	-0.007 <sup>a</sup>	0.529	0.526
	Positive coping score	-	-	-0.422	-0.528
	Negative coping score	-	-	0.179	0.18
≥13 years	Average total stress score	-0.257	0.086 <sup>a</sup>	0.514	0.439
	Positive coping score	-	-	-0.393	-0.527
	Negative coping score	-	-	0.269	0.298

<sup>a</sup>,  $P>0.05$ .

mental health problems among nurses, and the prevalence rates of depression, anxiety, and stress are 32.4%, 41.2%, and 41.2%, respectively (25). Our analysis of the stressors, coping style, and anxiety and depression scores of nurses with different lengths of service showed that nurses with

≤3 years of service had the lowest total stressor score and negative coping score, and their positive coping score was relatively high. In contrast, Nayeri *et al.* (26) and Boonrod *et al.* (27) failed to observe any significantly correlation between stress levels and the length of service. Pediatric

nurses with a length of service of less than 3 years are often more energetic and enthusiastic, with a stronger capacity to withstand and cope with stress, than nurses with a longer length of service. Daily work is supervised by a superior nurse. They have no family burden and have strong support from family members. Promotion is not an issue for them, and they are willing to spend more time and energy on work, so that they can advance in their careers more quickly. They have positive expectations of their work, working environment, and interpersonal relationships. Therefore, these nurses have a more positive attitude toward work, and their overall stress is not high. Further analysis of the various stressors revealed that nurses with  $\leq 3$  years of service had the highest stress score in patient management, which may be related to the fact that junior pediatric nurses have less experience, fewer skills, and lack communication skills as well as a comprehensive and systematic understanding of patients' conditions. Moreover, diverse and complicated disease conditions, poor cooperation from children, and the high expectations of parents can also increase the stress felt by junior nurses during patient management, which is further exacerbated by the inability of pediatric patients to communicate their condition. Therefore, adequate training should be offered to these nurses to improve their nursing capabilities, communication skills, and working performance, thus promoting a positive coping style and enhancing professional identity.

Pediatric nurses with a length of service of 4–7 and 8–12 years had higher stress scores. The scores for time allocation and workload showed significant differences compared with those of nurses with  $\leq 3$  years of service. Furthermore, these 2 groups had higher scores and proportions of anxiety and depression and lower positive coping scores. Nurses in these 2 groups are in the stages of enhancing their experience and skills. As the backbone of nursing in the clinical first-line setting, they are required to solve challenging problems in clinical nursing and do well in training. They are also responsible for taking care of children and their families, and providing continuous services. Sometimes, they are also expected to participate in scientific research. It is necessary for them to consider their own professional development and to communicate fully with department managers. In terms of their personal life, they may also need to manage other commitments, such as marriage, childbirth, supporting elderly relatives, and educating their own children. For shift workers, fatigue is often accompanied by depression and anxiety (28). Pediatric nurses with a length of service of 4–12 years face considerable

stress especially in terms of time allocation and workload, which can easily lead to mood swings, anxiety, and depression. In a supportive clinical team, members may feel safe to express their emotions and share their stories with others (29,30). Quattrin *et al.* (31) have shown that where there has not been sufficient collegial support, this lack of support has contributed to the burnout of some oncology nursing staff in Italy. Hospital managers should offer adequate psychological counseling for nurses with 4–12 years of service and develop time management courses to support them to organize their time efficiently or Establish multiple communication channels. Also, managers should understand the difficulties in life and establish stable social support systems, so that these nurses can be more positive and active at work. Moreover, they should provide more personal development opportunities, which will enable nurses to participate more in management and develop their own career plans.

Nurses with a length of service of  $\geq 13$  years had the highest positive coping score and lowest depression score. Their stress score was lower than that of the 4–7 years group and the 8–12 years group, which suggests that more experienced employees experience less professional stress (12), as described by Dargahi *et al.* (32). Nurses with  $\geq 13$  years of service have already accumulated rich clinical experience and life experience, and achieved career promotion. Most of them have a stable family life. They have also learned how to face and handle stress,

Correlation analysis revealed that the total stress score of pediatric nurses with different lengths of service was positively correlated with the scores for anxiety and depression. Furthermore, the positive coping score was negatively correlated with the total stress score and the anxiety and depression scores, and the negative coping score was positively correlated with the anxiety and depression scores. Thus, nurses with higher stressor scores tend to have more severe anxiety and depression. Workplace stressors and coping styles are key factors affecting nurses' anxiety, depression, and other negative emotions. Workplace stress adversely affects nurses' physical and mental health (33–35). In our current study, the correlation between the total stress scores of pediatric nurses with different lengths of service and the negative coping score was not statistically significant ( $P > 0.05$ ), which indicated that the stress levels of pediatric nurses with different lengths of service did not change with the alternation in negative coping. The possible explanation for this may be that some sources of stress are objective and cannot be eliminated by a change in coping style. Moreover, when an individual believes that they cannot cope with an

issue in a specific situation, they may adopt some negative coping strategies such as the contents from SCSQ “trying to temporarily leave the problem behind by taking a break or vacation”, “trying to forget the whole thing”, “accepting the reality because there is no other choice”, and comforting themselves, which, to a certain extent, may protect the individual from the negative impact of life stressors.

In conclusion, pediatric nurses with different lengths of service in tertiary hospitals in Chengdu experience different levels of workplace stress. Pediatric nurses with 4–12 years of service have higher workplace stress and are more likely to experience anxiety and depression. Stress in nurses is correlated with positive coping score and anxiety and depression scores. Pediatric nurses should understand the impact of workplace stress on their mental wellbeing, be aware of the stressors, pay adequate attention to their physical and mental health, avoid negative emotions such as anxiety and depression by positive coping style, and Meanwhile, nursing managers should make workplace stress a top priority and adopt effective measures to relieve the stress felt by pediatric nurses, taking into account their length of service. These measures may minimize stress and protect the physical and mental health of pediatric nurses, thus improving their enthusiasm for their work and, consequently, the quality of nursing.

### Limitations

This study is a preliminary investigation, there are some deficiencies: In terms of research area and participants, there were only selected the tertiary hospitals of Chengdu, and no other tertiary hospitals of the city and township hospitals and community hospitals nurses, also failed to compare pediatric doctor’s stress research,; In terms of research content, there is no further research on the physiological factors that influence and control stress and depression. In terms of research methods, only the cross-sectional research method of questionnaire survey was adopted, but mixed research prevention was not adopted for verification and further follow-up. Therefore, in the further study, pediatric medical workers in different types of hospitals will be investigated, and related physiological indicators will be combined with follow-up observation, so as to obtain more dynamic research results.

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### Footnote

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*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. The study was conducted in accordance with the Declaration of Helsinki (as revised in 2013). The study was approved by ethics board of Chengdu Women and Children Center Hospital and informed consent was taken from all individual participants.

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