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A THOROUGH ANALYSIS OF BURNOUT AMONG NURSING PROFESSIONALS DURING PREGNANCY

Dr. Maria Garcia, Dr. John Smith, and Dr. Anna Lopez
National Institute of Health Sciences, Madrid, 28029, Spain

Abstract:
The rapidly changing COVID-19 epidemic situation has raised concerns about burnout among healthcare workers in China. Burnout, a social-psychological disorder characterized by emotional exhaustion, depersonalization, and decreased personal accomplishment during work, can significantly affect nursing professionals. This study investigates the burnout experienced by pregnant nurses and its relationship with perceived organizational support (POS), coping style (CS), depression, anxiety and stress (DAS), and work and family conflict (WAFC). A survey of over 10,000 nurses in China during the COVID-19 pandemic revealed a high prevalence of burnout, with 17.9% of female nurses experiencing high levels of burnout. Pregnancy, as a significant life event, adds further stress to pregnant nurses as they juggle multiple roles and responsibilities. This study aims to bridge the research gap regarding nurse burnout during pregnancy and its associated factors. The findings will inform strategies to prevent and reduce burnout, safeguard the physical and mental well-being of this vital nursing workforce, and ensure the provision of quality healthcare.

Keywords: burnout, pregnancy, nurses, perceived organizational support, coping style, depression, anxiety, stress, work and family conflict.

1. Introduction

China released optimized COVID-19 prevention and control measures on December 7, 2022, and the rapidly changing epidemic situation may lead to burnout for many health care workers [1]. Burnout is described as a social-psychological disorder, associated with emotional exhaustion, depersonalization, and decreased personal accomplishment during work [2]. The research [3] has shown that burnout not only has a significant negative impact on nursing's self-efficacy, resilience, and social support, but also reduces work willingness. Ruey et al.[4] in 2020 surveyed over 10,000 nurses in China during the COVID-19 epidemic and found that there was a high prevalence of burnout, with up to 17.9% of female nurses experiencing high levels of burnout. And when a woman is pregnant, the problem of burnout is even more pronounced [5]. Pregnancy is an important life event for pregnant women. While they are pregnant, they also must face the pressure of the environment, family, work, and the change of their roles, which leads to varying degrees of stress and burnout in pregnant women [5]. Recent studies have shown that perceived organizational support (POS)[6], coping style (CS)[7], depression, anxiety and stress (DAS)[8], work and family conflict (WAFC)[911] have a certain impact on burnout of nurses. However, there is a gap in research on the characteristics of nurse burnout during pregnancy and its correlation with the appeal factors. The purpose of this paper is to understand the burnout of nurses during pregnancy, and to analyze the effects of POS, CS, DAS and WAFC on their burnout. To provide a basis for effective measures to prevent and reduce burnout and maintain the physical, and mental health of this important nursing workforce.

2. Methods

2.1 Study design and Participants

Convenience sampling was used. The study is descriptive and was conducted in January 2023. A sample of working pregnant nurses was recruited from 12 public tertiary hospitals in Hainan Province. Participation in this study was voluntary and anonymous. According to kendall's sample size calculation method [12], the sample size should be 5-10 times the number of variable entries. 19 independent variables were investigated in this study, and 25% of invalid questionnaires were considered, so the sample size of this study was calculated as follows: N=19*(5-10) *(1+25%) =119-238. 238 cases were finally included in this study.

2.2 Date collection

After the researcher contacted the director of the nursing department of each hospital to obtain consent, one volunteer was recruited from each hospital and all volunteers were instructed and trained uniformly. The first page of the questionnaire was the informed consent form, and the questionnaire was accompanied by uniform instructions at the beginning of the questionnaire, which had to be completed within one hour. All questions would not be submitted without being completed, and each person was only allowed to submit once. The questionnaire will be distributed to hospital volunteers who will assist in distributing it to the relevant work groups for informed pregnant nurses to complete, during the completion of which each hospital volunteer will be responsible for answering any questions the subject has during the process. A total of 250 questionnaires were distributed and the data were double-checked to exclude 12 invalid questionnaires with obvious tendencies. There were 238 valid questionnaires, with a validity rate of 95.2%.

2.2.1 Demographic data

Demographic data includes six items, including age, ethnic group, educational background, working years, department, and type of hospital.

2.2.2 Maslach Burnout Inventory-Human Services Survey (MBI-HSS)

The scale was developed by Maslach et al [13]. It is mainly applicable to measure the level of burnout related to the service industry. There are 22 entries containing 3 subscales, including emotional exhaustion (EE) (9 items), depersonalization (DEPE) (5 items), and low personal accomplishment (PA) (8 items), where EE and DEPE are scored positively, and PA is scored negatively. Responses are rated using a 5-point Likert-type scale ranging from 0 to 6, indicating "never", "very rarely", "a few times", "a little more often", "most of the time", "almost every day" and "every day" respectively. The sum of the three subscales is the total burnout score, with higher scores reflecting stronger burnout. The total Cronbach's α coefficient measured in this study was 0.959, while the Cronbach's α coefficients for EE, DEPE, and PA were 0.979, 0.973, and 0.976 respectively.

2.2.3 Perceived Organizational Support Scale (POSS)

In 2006, Ling et al.[14] defined the perceived organizational (POS) support as employees' perceptions of support for their work, identification with their values, and concern for their interests. The scale consists of three subscales: work support (WS) (7 items), value identification (VI) (7 items), and interest concern (IC) (10 items). Responses are rated using a 5-point Likert-type scale ranging from 1 to 5. The sum of the three subscales is the total burnout score, with higher scores reflecting greater POS. Cronbach's α coefficient measured in this study was 0.962, while Cronbach's α coefficients for WS, VI, and IC were 0.959, 0.913, and 0.940 respectively.

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2.2.4 Simple Coping Style Scale (SCSS)

SCSS was compiled by Xie Yaning [15] according to the characteristics of the Chinese population, including 20 items in two dimensions: positive coping (PC) and negative coping (NC). Responses are rated using a 4-point Likert-type scale ranging from 0 to 3. In this study, Cronbach's α coefficients of the PC and NC subscales were 0.988 and 0.971 respectively.

2.2.5 Depression Anxiety Stress Scale-21 (DASS-21)

DASS-21 compiled by Lovibond[16] was used to measure the level of mother's depression, anxiety, and stress (DAS). The scale has a total of 21 items, including the degree of depression (7 items), anxiety (7 items), and stress (7 items) in the past 30 days. Responses are rated using a 4point Likert-type scale ranging from 0 to 3. The sum of the scores among the factors is the total score. Higher the score indicates higher severity of the corresponding negative emotional state. Cronbach's α coefficient measured in this study was 0.971, while Cronbach's α coefficients for depression, anxiety, and stress were 0.981, 0.965, and 0.967 respectively.

2.2.6 Work and Family Conflict Scale (WAFC)

WAFC was compiled by Netemeyer et al[17]. The scale includes two subscales: work-family conflict (WFC) (the first 5 items) and family- work conflict (FWC) (the last 5 items). The scale is the most widely used scale in the study of work-family conflict. Responses are rated using a 7-point Likert-type scale ranging from 1 to 7. Higher the score indicates stronger work and family conflict state. In this study, the Cronbach's α coefficient of the scale was 0.951, while the Cronbach's α coefficients of WFC and FWC were 0.959 and 0.965 respectively.

2.3 Statistical analysis

SPSS 25.0 software was used for statistical analysis. Descriptive statistics, correlation analysis, and multiple stepwise regression analysis were performed on the findings, and t-test was used for significance testing, with $P < 0.05$ indicating statistically significant differences.

2.4 Ethical approval

The research was conducted in accordance with the principles of the Declaration of Helsinki. This study was approved by the ethics committee of the hospital where it was conducted (HNSZYY-2022-LL-036).

3. Results

3.1 Participants' demographics

Table 1: Participants' demographics.

Items	Categories	N	Percent (%)
Age gr	≤25	50	21.

ou p			0 0
	26 - 30	1 1 6	4 8 . 7 4
	31 - 35	6 1	2 5 . 6 3
	≥3 5	1 1	4 . 6 2
Et hn ic gr ou p	Ha n eth nic gr ou p	2 2 7	9 5 . 3 8
	Ot he r	1 1	4 . 6 2
H os pi tal ty pe	Ge ne ral ho spi tal	2 1 9	9 2 . 0 2
	Sp eci ali ze d Ho spi tal	1 9	7 . 9 8

Education	College degree or under	73	30.67
	Bachelor's degree or above	165	69.33
Department	Internal medicine	46	19.33
	Surgery	49	20.59
	Outpatient service	21	8.82
	Administra	24	1.08

	tive		
	Emergency and Intensive care center	14	5.88
	Other	84	35.29
Type of hospital	General hospitals	197	82.77
	Specialist hospitals	41	17.23
Total		238	100

Han ethnic group: the main ethnic group in China.

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The demographic characteristics of pregnant nurses are presented in Table 1. The mean age of the pregnant nurses was 27.32 (SD = 4.908) years. The majority of the pregnant nurses in this study were Han ethnic group (95.38%) and from general hospital (92.02%). 69.33% of the pregnant nurses had bachelor's degrees or above. 19.33% of the pregnant nurses worked in internal medicine, 20.59% worked in surgery, 8.82% worked in outpatient service, 1.08% worked in administrative and 5.88% worked in emergency and intensive care centers. 82.77% worked in general hospitals.

3.2 Correlations between the study variables

In order to have an overall understanding of the sample, a correlation analysis was performed on the sample data. Table 2 shows the correlations between the variables. According to the correlation coefficient matrix, there is a significant correlation between the main variables($p<.01$), which provides a good basis for further analysis.WS, VI, IC and PC were negatively correlated with EE ($r = –.382, –.373, –.457$ and $–.424$, $p < .01$, respectively), DEPE ($r = –.290, –.309, –.349$ and $–.267$, $p < .01$, respectively) and PA($r =–.434, –.502, –.391$ and $–.384$, $p < .01$, respectively). NC, Stress, Anxiety, Depression, FWC were positively correlated with EE ($r =.547, .464, .388, .591, .493$, and $.578$, $p < .01$, respectively), DEPE ($r = .693, .377, .330, .653, .387$, and $.580$, $p < .01$, respectively) and PA ($r = .384, .356, .330, .305, .381$, and $.402$, $p < .01$, respectively).

Table 2: Correlations between the study variables.

variable	WS	VI	IC	PC	NC	Stress	Anxiety	Depression	WFC	FWC	EE	DEPE	PA	M	SD
EE	-0.382**	-0.373**	-0.457**	-0.424**	0.547**	0.464**	0.388**	0.591**	0.493**	0.578**	1			23.82	17.99
DEPE	-0.290**	-0.309**	-0.349**	-0.267**	0.693**	0.377**	0.330**	0.653**	0.387**	0.580**	0.600**	1		7.25	10.64
PA	-0.434**	-0.502**	-0.391**	-0.384**	0.384**	0.356**	0.330**	0.305**	0.381**	0.402**	0.377**	0.287**	1	23.38	17.45
M	32.29	21.43	20.45	25.40	11.84	7.09	6.57	7.45	14.83	12.14	23.82	7.25	23.38		
SD	9.99	5.74	6.52	15.00	10.80	7.07	6.80	7.76	6.78	6.67	17.99	10.64	17.45		

3.3 Multiple linear regression results

Table 3: Multiple linear regression.

Scales	Subscales	β	t	p	R2	Adjusted R^2
EE						
POSS	Constant		12.919	0.000	0.231	0.222
	WS	-0.180	-2.494	0.013		
	VI	-0.007	-0.079	0.937		
	IC	-0.350	-3.921	0.000		
SCSS	Constant		10.469	0.000		

	PC	-0.311	-5.938	0.000		
	NC	0.473	9.016	0.000		
DASS-21	Constant		8.748	0.000	0.367	0.359
	Stress	0.165	2.154	0.032		
	Anxiety	0.001	0.013	0.989		
	Depression	0.490	7.233	0.000		
WAFCS	Constant		0.182	0.856	0.368	0.362
	WFC	0.228	3.506	0.001		
	FWC	0.441	6.791	0.000		
DEPE						
POSS	Constant		8.232	0.000	0.136	0.125
	WS	-0.123	-1.602	0.111		
	VI	-0.066	-0.697	0.487		
	IC	-0.230	-2.429	0.016		
SCSS	Constant		1.155	0.249	0.491	0.487
	PC	-0.109	-2.276	0.024		
	NC	0.667	13.926	0.000		
DASS-21	Constant		1.053	0.293	0.428	0.421
	Stress	-0.005	-0.069	0.945		
	Anxiety	-0.051	-0.731	0.466		
	Depression	0.685	10.634	0.000		
WAFCS	Constant		-3.322	0.001	0.338	0.332
	WFC	0.060	0.904	0.367		
	FWC	0.543	8.175	0.000		
PA						
POSS	Constant		12.919	0.000	0.231	0.222
	WS	-0.180	-2.494	0.013		
	VI	-0.007	-0.079	0.937		
	IC	-0.350	-3.921	0.000		
SCSS	Constant		10.725	0.000	0.238	0.232
	PC	-0.310	-5.295	0.000		
	NC	0.310	5.288.	0.000		
DASS-21	Constant		9.958	0.000	0.148	0.137
	Stress	0.198	2.231	0.027		
	Anxiety	0.134	1.579	0.116		
	Depression	0.109	1.391	0.165		
WAFCS	Constant		2.551	0.011	0.192	0.185
	WFC	0.218	2.973	0.003		

	FWC	0.270	3.678	0.000		
RR^{22}= coefficient of determination. β= standardised coefficients.						

To determine which significant variables predicted burnout levels, multiple regression was used. Five scales (POSS, SCSS, DASS-21, WAFCS) were entered into a stepwise regression equation.
The best predictor of emotional exhaustion was WAFCS (adjusted R2=0.362), followed by DASS21 and POS. The best predictor of depersonalization was DASS-21 (adjusted R2=0.421), followed by WAFCS, and POS, while the best predictor of personal accomplishment was POSS (adjusted R2=0.222), followed by WAFCS and DASS-21 (Table 3).

4. Discussion

This is the first study using a cross-sectional design to examine burnout and its associated factors among pregnant nurses during China's optimized COVID-19 policy. We conducted the survey in 12 public tertiary hospitals in Hainan Province. Among them, 46 (19.33%) nurses worked in surgical, 49 (20.59%) nurses worked in internal medicine, 21 (8.82%) nurses worked in outpatient service, and the rest worked in administrative, emergency and intensive care center and Other. The diversity of nurses' departmental backgrounds made our sample relatively well representative of working pregnant nurses from all departments of the health care system. The World Health Organization defines job burnout as follows, "Burnout is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed"[18]. Burnout is associated with loss of motivation, withdrawal of idealism, increased job dissatisfaction, and cynicism. In addition, morale and productivity are reduced[19].This study found high psychological problems were prevalent among pregnant nurses.
Despite the aforementioned physical and mental health symptoms, nurses expressed their willingness to participate in frontline work until delivery during COVID-19. Previous studies have shown that pregnant women infected with COVID-19 are at higher risk for obstetric complications such as cesarean section[20]. Pregnancy nurses in many hospitals are required to work until one week before their due date of delivery and still work night shifts as they did before pregnancy, which is physically and psychologically demanding. In this study, nurses reported moderate levels of burnout. In addition, 43.27%, 20.58%, and 53.78% of nurses had moderate/high EE, DP, and PA, all indicating a high prevalence of burnout among nurses. After China's optimized policy, in-hospital infections with COVID-19 severe patients peaked at 128,000 on January 5 [21]. The hospital's workload has increased dramatically in response to the outbreak, and nurses need to be sent out to support from time to time. Nurses need to be ready for new challenges. A previous study showed that for every value increase in the scale workload ('quantitative demands'), the 'burnout' scale increased by 0.47[22]. We also found that WS, VI, IC and PC of pregnant nurses were negatively correlated with EE, DP and PA. NC, Stress, Anxiety, Depression, FWC were positively correlated with EE, DP and PA.
POS is an internal psychological feeling of employees, specifically a subjective conscious feeling of how the organization evaluates their results and rewards them for their accomplishments. This study confirms that POS is an important variable. In the multiple regression model, the sense of organizational support reduces EE and DEPE levels and raises PA, indicating that burnout decreases as POS increases. This is consistent with the study[6] suggesting that POS plays a role in reducing burnout. More POS can reduce the negative effects of burnout and the tendency to quit. Therefore, companies should provide appropriate organizational support to reduce the probability of burnout. This includes paying bonuses on holidays, organizing group excursions, arranging group entertainment, etc.

SCS as a mediating mechanism between stress and health, plays an important protective role in the physical and mental health of individuals[7]. An individual's coping ability and coping style directly affect personal mood, which in turn affects burnout and physical and mental health. The results of this study showed that the PC score of 25.4 (SD=15) was relatively high and the NC score of 11.84 (SD=10.80) was relatively low. The study suggests that pregnant nurses were more inclined to choose positive and effective solutions when faced with difficulties. The reasons for this analysis may be related to the relatively high overall quality of pregnant nurses as an individual, the relatively mature way of dealing with problems, and the better ability to cope with burnout. Meanwhile, the PC approach can reduce the degree of EE and DEPE and enhance PA, while the NC approach can aggravate the degree of EE and DEPE and reduce PA, which makes people feel negative about their work and is not conducive to relieving mental tension and psychological stress, which is consistent with the findings of Huiling 2020 [7]. It is suggested that strengthening Pregnant nurses coping skills training and guiding them to choose to use positive and mature coping styles to solve problems can reduce the incidence and severity of burnout.

Anxiety is a widespread, unpleasant, vague sense of panic with unknown causes, including uncertainty, helplessness, physiological arousal, and symptoms such as fatigue, restlessness, and increased heart rate[23 24]. Stress is an inevitable part of everyday life. Work-related stress is defined as emotional, perceptual, behavioral, and physiological responses to negative emotions associated with work, organizations, or the workplace [25]. Depression is one of the most common behavioral disorders and is associated with low mood, loss of interest, guilt, uselessness, and changes in energy, concentration, sleep, and appetite [23]. The pregnant nurse's score of 21.11 (SD=18.64) on the DASS-21 is on the lower degree of the scale, which is also lower compared to the findings of Mohammad 2021[26].

The reason for this may be the concentration of pregnant nurses in their 30s, their higher level of education, and the fact that their extensive medical work has given them more physical and psychological knowledge, so they are better able to control their mental emotions. In the multiple regression model, the sense of organizational support elevates EE and DP levels and decreases PA, indicating that burnout rises as DASS increases. This is consistent with the findings of Bui2021. It suggests that managers giving training on nurses' mental health, exercising their resilience and selfefficacy, and learning to self-regulate play an important role in reducing burnout from work.

In general, the POS, SCS, DAS, and WAFC factors all predicted burnout, with WAFC predicting EE best, DAS predicting DEPE best, and POS predicting PA best.

5. Limitations

Among the limitations of this study, it should be noted that, firstly, it was not possible to study causality as a cross-sectional design was used. In future studies, an experimental or longitudinal design would be appropriate to explore more complex interactions between the study variables. Secondly, the sample size was small and participants were recruited using convenience sampling; These factors restrict the generalisability of findings from this study. Thirdly, this study used data that were collected using self-report methods. Consequently, the degree of association between the study variables may be overestimated or underestimated. Finally, the five groups of variables included in the study model explained only a certain proportion of the variance in the causal variables. Therefore, other variables may also contribute significantly and should be explored further. This study was conducted in China only and no international survey has been carried out yet.

6. Conclusions

This study used a cross-sectional survey to delineate the contribution of five groups of independent variables, POS, SCS, DAS, and WAFC, to burnout among pregnant nurses in China and to extend the international literature in this area. Pregnant nurses with more severe DAS and WAFC and habitual NC were more likely to experience negative psychological outcomes. POS and PC could prevent burnout. Therefore, organizations, managers, and pregnant nurses should collaborate to identify protective and risk factors and develop strategies to jointly prevent and respond to burnout and promote staff psychological and emotional well-being.

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