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A causal model of job stress among Thai nurse-midwives

Original Article

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Abstract: Objective: To test a causal model of job stress among nurse-midwives working in labor and delivery units in Thailand. Methods: Random and convenience sampling was used to recruit 282 nurse-midwives with at least 6 months of work experience from 16 regional tertiary hospitals in Thailand. Data were collected from May to December 2020. Research instruments with good internal consistency reliability ranged from 0.83 to 0.91 including the Job Stress Scale and the Thai version of the Job Content Questionnaire (TJCQ). Descriptive statistics and a structural equation model were used for data analysis.

> Results: Job demands were the strongest predictor of job stress. At the theoretical level, high job control plays a crucial role in directly reducing job stress. However, the present research provides contrary evidence to the theoretical predictions. When nurse-midwives perceive high job control, they perceive pressure to meet the expectations of their supervisors and colleagues. Therefore, high job control can contribute to job stress. Likewise, job support had an indirect effect on job stress among nurse-midwives through job control. The modified model fitted the empirical data ($\chi^2 = 57.76$, df = 22, CMIN/df = 2.62, goodness of fit (GFI) = 0.96, adjusted goodness of fit (AGFI) =0.91, comparative fit index (CFI) = 0.95, and root mean square error of approximation (RMSEA) = 0.07). The effects of job demands, job control, and job support on job stress among Thai nurse-midwives can explain 67% of the model's total variance for job stress.

> Conclusions: Nurse-midwives who encounter high job demands and less control over their work control suffer from job stress. Job support does not directly affect nurse-midwives' job stress but influences it through perceived job control. Strategies to decrease job stress among Thai nurse-midwives should focus on how to balance job demands, and enhance job control, and job support.

Keywords: job control • job demands • job stress • job support • nurse-midwives

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1. Introduction

Job stress in the nursing profession is at an all-time high, threatening nurses' physical and emotional well-being.^{1,2} Job stress among nurses can be defined as unpleasant emotions and reactions to the clinical work environment,

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implying a poor fit between perceived job demands and inability, lack of readiness, or inadequate preparation to confront and cope with the work responsibilities.^{3,4}

Much research has been focused on nurses who work in emergency care units,^{5–7} and intensive care units^{8,9} because they are continuously exposed to specific stressors in the environment.¹⁰ However, little research has been conducted on nurses-midwives who are involved in the acute care of pregnant women.

The structure of Thailand's health care system and the current shortage of nursing staff put Thai nurses in all public hospitals at an increased risk of exposure to high psychological job demands. This is especially true in tertiary hospitals that receive patient referrals from lower-level hospitals, because they have the state-ofthe-art equipment and trained personnel for diagnosis and treatment.¹¹ Nurse-midwives working at the tertiary care level require advanced knowledge in birthing care and the use of medical technologies.¹² Nurse-midwives are responsible for key clinical decisions and provide the majority of direct clinical care for antepartum, intrapartum, and postpartum women at the bedside.¹³ They spend more time with women in labor than other health care providers,¹⁴ including common clinical practices. The high job demands and work responsibilities of nurse-midwives can lead to job stress.

One of the sources of job stress for nurses-midwives is the awareness that pregnant women and their families expect perfection in the birth of their newborn with the best possible service and care.¹⁵ The potential death of a child, mother, or both, is profoundly stressful, physically demanding, and emotionally difficult for nurse-midwives.¹⁶ The possibility of legal prosecution, in particular, is a leading cause of stress among nursemidwives that contributes to burnout, emotional exhaustion, and distress.^{16,17}

Karasek and Theorell¹⁸ developed the Job Demand-Control-Support (JDCS) model (or the Job Strain model) which is often used for modelling job stress among nurses. As a clinical practice profession, nursing has a unique set of expectations, standards, needs, and high level of control.¹⁸ The JDCS model are job demands, job control (decision latitude), and job three components of the job support (social support). Job demands are the parts of workload that have been operationalized primarily in terms of time constraints and role conflict. Job control is the ability to direct one's job activities and is composed of two components: skill discretion and decision authority. Job support is defined as the overall levels of helpful social interaction available on the job from both co-workers and supervisors.¹⁸

Much research has been published on job stress experienced by both general and critical care nurses and has often focused on nurses' burnout and satisfaction/ dissatisfaction with the organization. Less is known about job stress among nurse-midwives, especially in Thailand. Therefore, this study aimed to describe a causal model of job stress among nurse-midwives who work in tertiary hospitals in Thailand because they provide advanced nursing care in specialized clinical settings with work activities and demands that can be continuously changing and unpredictable.

2. Methods

2.1. Research design

A cross-sectional, correlational design with structural equation modeling (SEM) was used to test the hypothesized JDCS model of job stress (Figure 1) in nursemidwives in Thailand.

2.2. Setting and participants

The population for the study was nurse-midwives who practiced in regional hospitals (super tertiary hospitals) under the jurisdiction of Thailand's Ministry of Public Health. From the four geographic regions of Thailand, a sample of four tertiary hospitals from each region was randomly selected out of the possible 28 hospitals. A research coordinator volunteered from each of the 16 selected hospitals to distribute the guestionnaires to a convenience sample of eligible participants. Inclusion criteria to participate were that the nurse-midwives should be registered nurses who had worked in a labor and delivery unit for at least 6 months, should not have taken the role of head nurse of the unit, and should be willing to participate in the study. The required minimum number of participants for the structural equation analysis of this study was 10 times the number of 24 estimated parameters, a total of 240 participants.^{19,20}

To compensate for a possible 15% dropout rate, the questionnaires were distributed to a total of 282 eligible participants (Figure 2). Six questionnaires were not returned. After testing the SEM assumptions, four questionnaires were identified as statistical abnormalities. A total of 272 participants were included in the final data analysis.

2.3. Measurements

2.3.1. The Job Stress Scale

The Job Stress Scale was developed by Parker and Decotiis²¹ to measure internal conditions or feelings of unpleasant emotions and reactions to a job, or disturbing circumstances in the workplace that pose a threat. The scale was translated by Jampong²² into a Thai version and tested for validity and reliability with an internal reliability coefficient of 0.94. The 13-item Job Stress



Figure 1. Model of job stress among Thai nurse-midwives.



Figure 2. Random sampling of hospitals and convenience sampling of participants by head nurses (H).

Scale is composed of two-components: time pressure and psychological distress. The five-point Likert scale has response options ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Summed scale scores can range from 13 to 65 with higher scores indicating higher levels of job stress. For this study, the Cronbach's alpha of the Job Stress Scale–Thai version was 0.91.

2.3.2. The Thai Version of the Job Content Questionnaire (TJCQ)

The Job Content Questionnaire was originally developed by Karasek et al.²³ to measure job demands, job control, and job support. Phakthongsuk²⁴ created the 59-item Thai version (TJCQ) based on the JDCS model.^{18,23} The validity and reliability of TJCQ were assessed on a sample of 10,415 Thai workers in over 100 occupations, including Thai professional nurses. The Cronbach's alpha for internal consistency for the three subscales ranged from 0.71 to 0.86.²⁴ The TJCQ's 30-item job demands subscale has three components: psychological job demand (12 items), physical job demand (6 items), and workplace hazard (12 items). Each item has a response set of four-point Likert scale options ranging from 1 (*strongly disagree*) to 4 (*strongly agree*), except for workplace hazard which has a 3-point response option, ranging from 1 (*no problem*) to 3 (*severe problem*). The possible range of scores is from 30 to 108 with higher scores indicating a higher level of job demands. The Cronbach's alpha of the job demands in this study was 0.83.

The TJCQ's 11-item job control (decision latitude) subscale measures the variety of skills and level of creativity required to perform the job²⁵ and the decisional autonomy of working employees. There are two components: skill discretion (6 items) and decision autonomy (5 items). The response was recorded on a 4-point Likert scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*) for each item. The final score is calculated by adding the sums of two subscales. The range of possible values is from 4 to 44, with a higher number indicating a higher level of job control. The current study's Cronbach's alpha was 0.84.

The TJCQ's 8-item job support subscale measures the various types of task assistance that they receive from their colleagues and supervisors for coping with work-related problems. The two components of the subscale are supervisor support (4 items) and colleague support (4 items). The items are rated on a 4-point Likert scale ranging from 1 (*strongly disagree*) 4 (*strongly agree*). The sum of the two subscales can range from 8 to 32. Higher scores indicate a higher level of job support at work. The Cronbach's alpha of job support subscale was 0.89 for this study.

2.4. Data collection

Data were collected from May to December 2020. Each of the 16 head nurses of the labor and delivery units and the 16 nurse-midwives who volunteered to be research coordinators received information about the study's purpose and the survey method. The research coordinators distributed the package of questionnaires to the participants and informed them about the confidentiality and anonymity of responses. Participants signed consent forms, completed the questionnaires during their personal time, and returned the completed questionnaires within 2 weeks using the envelope provided.

Characteristics	n	%						
Age (years) (mean = 36.8, SD =10.14, minimum = 23, maximum = 60)								
≤ 30 years	112	41.2						
31 40 years	55	20.2						
41 50 years	70	25.7						
51–60 years	35	12.9						
Marital status								
Single	119	43.8						
Married	138	50.7						
Widowed/divorced/separated	15	5.5						
Having children								
No child	162	59.6						
Having children	110	40.4						
Education								
Bachelor's degree in nursing	257	94.5						
Master's degree (unspecified)	15	5.5						
Work experience (years) (mean = 12.9, SD = 9. maximum = 36)	70, minimun	n = 1,						
≤10 years	149	54.8						
11–20 years	57	21.0						
21–30 years	48	17.6						
≥31 years	18	6.6						
Shift work								
Day shift only	28	10.3						
Rotating shift	244	89.7						
Number of shifts/month (mean = 25.6 , SD = 4.8 maximum = 40)	36, minimum	e = 20,						
20–25 shifts	172	63.3						
26–30 shifts	16	5.9						
31–35 shifts	76	27.9						
>36 shifts	8	2.9						
Knowledge and skills training in the past year								
≤10 h/year	93	34.2						
>10 h/year	179	65.8						
Monthly income								
≤20,000 baht	35	12.9						
20,001-25,000 baht	35	12.9						
25,001-30,000 baht	72	26.5						
>30,001 baht	130	47.8						

Note: SD, standard deviation.

Table 1. The demographic characteristics of the participants (n = 272).

2.5. Data analysis

All variables were examined for accuracy of data entry, missing data, and statistical outliers. Measures of central tendency were calculated for each variable, including means, standard deviations (SDs), frequencies, percentages, ranges, and variable distributions. The assumptions of SEM were evaluated, including univariate outliers, normality of distribution, multivariate normality, multicollinearity, and homoscedasticity. Construct validity of each questionnaire and the hypothesized model of job stress were assessed and tested using confirmatory factor analysis (CFA). The fit of the data's structure was examined using standard goodness-of-fit indices (with commonly used cut-off values): CMIN/df = χ^2/df (<3.0), goodness of fit (GFI) (>0.90), adjusted goodness of fit (AGFI) (>0.90), comparative fit index (CFI) (CFI \ge 0.90), and root mean square error of approximation (RMSEA ≤ 0.05). Bivariate relationships of all study variables in the model were examined with Pearson's correlations. Further relationships were examined during SEM, including the magnitude of causal effects and both direct and indirect effects. Statistical software program for analysis was IBM® SPSS® version 23 bundled with the Amos structural equation modelling program. The level of significance was set at 0.05.

3. Results

3.1. Characteristics of the participants

All the participants were female (100%). The average age was 36.8 years (SD = 10.14), 50.7% were married, and 59.6% had no children. Most of them had graduated with a bachelor's degree in nursing (94.1%). The average work experience as a nurse midwife was 12.9 years (SD = 9.7), 89.7% worked rotating shifts, and 63.3% worked 20–25 shifts/month. Almost two-thirds of

the participants (65.8%) attended professional continuing education conferences on midwifery, maternal and child care, or related job topics for >10 h/year. About half of the participants (47.8%) had an income of >30,001 Baht/month (Table 1).

Pearson's correlation coefficients between the Job Stress scale total score and the three subscales of the TJCQ (job demands, job control, and job support) ranged from r = -0.202 to r = 0.542. Consequently, there was no significant multicollinearity among the study variables²⁴ (Table 2).

3.2. The hypothesized model testing

Results revealed that the hypothesized model should be modified because the parameter estimate from job support to job stress was not statistically significant. After modifying the model by deleting the path, the model demonstrated a good fit with the empirical data. The model explained 67% of the total variance. The five goodness-of-fit indices of the hypothesized and modified models are compared in Table 3.

Figure 3 shows that job demands of nurse-midwives had a significant direct positive effect on their job stress ($\beta = 0.80$, $P \le 0.001$). It also had a significant direct positive effect on job support ($\beta = 0.22$, $P \le 0.05$). Job demands had a significant direct negative effect on job control ($\beta = -0.19$, $P \le 0.05$) and an indirect effect on job stress through job control only. Job support had a significant direct positive effect on job control ($\beta = 0.69$, $P \le 0.001$). Job control had a significant direct positive effect on job stress ($\beta = 0.22$, $P \le 0.05$). Because the effect of job support on job stress was not significant

				Pearson's correlation coefficients (r)			
Variables		Mean	SD	1	2	3	4
1	Job stress	35.6	9.98	1			
2	Job demands	70.6	8.08	0.542**	1		
3	Job control	33.8	3.81	-0.163**	-0.068	1	
4	Job support	24.3	3.26	-0.202**	-0.215**	0.476**	1

Note: **P* < 0.05; ***P* < 0.01.

SDs, standard deviations.

Table 2. Means, SDs and correlations for key variables (n = 272).

Model	χ^2	df	CMIN/df	GFI	AGFI	CFI	RMSEA
Model fit criterion	-	-	<3.0	>0.90	>0.90	≥0.90	≤0.05
Hypothesized	57.70	21	2.74	0.96	0.91	0.95	0.08
Modified model	57.76	22	2.62	0.96	0.91	0.95	0.07

Note: CMIN/df = χ^2/df .

AGFI, adjusted goodness of fit; CFI, comparative fit index; GFI, goodness of fit; RMSEA, root mean square error of approximation.

Table 3. Model fitness indices between the hypothesized model and the modified model (n = 272).



Note: **P* < 0.05, ***P* < 0.01,****P* < 0.001. ns, non-significant.

Figure 3. The modified model of job stress among Thai nurse-midwives.

Variables	Job control			Job support			Job stress		
	DE	IE	TE	DE	IE	TE	DE	IE	TE
Job demands	-0.19*	-	-0.19*	0.22*	-	0.22*	0.80***	-0.01	0.79
Job control	-	-	-	-	-	-	0.22*	-	0.22*
Job support	0.69***	-	0.69***	-	-	-	-	0.15	0.15
	$R^2 = 0.46$			$R^2 = 0.05$			$R^2 = 0.67$		

Note: *P < 0.05, **P < 0.01, ***P < 0.001. DE, direct; IE, indirect; TE, total effects.

Table 4. Parameter estimates of DE, IE, and TE of the modified model (n = 272).

(β = -0.04, *P* =0.795), the path was deleted from the model. The results of the modified model and the effects on job stress among nurse-midwives are presented in Figure 3 and in Table 4.

4. Discussion

High job demands were the major cause of job stress in the work of nurse-midwives. Theorists agree that perceived job demands, such as high psychological and physical demands, and work hazards lead to emotions of job stress among employees.^{21,26,27} All components of a job that demand continuous physical/psychological (cognitive/emotional) effort, including the organization, are considered job demands.^{28,29} All components of work can contribute to the unpleasant reactions of job stress when demands exceed the nurse-midwives' ability to control their nursing practice and work environment. Demands on the job can have both positive and negative outcomes. Much depends on the nature of the job demands and the person's ability to confront and manage them.

This research study was carried out among nurse-midwives who worked in regional hospitals. Tertiary regional hospitals are complex organizations with advanced investigation technologies and skilled health care professionals who provide care for complex patients with high levels of conditions or illness severity.¹¹ A tertiary hospitals' environment is demanding and the job demands are high for the level of care that is provided. The job demands in this environment require mastering new skills and keeping knowledge up-to-date.³⁰ In urgent and emergency situations, nurse-midwives must make swift decisions in a short amount of time and be able to cope with obstetric crises and high-risk pregnancies. They learn to practice midwifery semiautonomously to collaborate with other multidisciplinary teams to reduce conflict.³¹ As a result, nurse-midwives working in these hospitals confront and manage heavy workloads and experience job stress.

Higher job demands are an important predictor of job stress.³² Major sources of long-term job stress for nurse-midwives include long working hours, including overtime, the documentation required for medical and legal reasons and hospital accreditation, the semi-autonomous scope of nurse-midwifery practice, and the non-routine work hazards of obstetric emergencies at a tertiary hospital. Those who practice nurse-midwifery under these ongoing sources of pressure are prone to perceived psychological distress and experience work–life imbalance that leads to burnout.^{33–35}

We found that job control had a significant direct positive effect on the job stress of nurse-midwives. This result is contrary to what might be expected. Employees who report more psychological job demands and less job control or decision latitude tend to have a higher risk of mental health issues.³⁶ The strong influence of job support on job control could be a reason for the unexpected difference between job control and job stress. It would be expected that strong support from supervisors and colleagues would improve mental well-being, reduce job stress (although this was not found), and increase job control.³⁷

However, high job control from the support of the supervisor might change a person's social identity and standing in the workgroup, resulting in possible resentment from colleagues and/or internalized pressure to meet the supervisor's increased expectations. The same mechanisms that diminish well-being when support is low might also reduce well-being when support is very high.³⁸ High levels of job control have been linked to unfavorable employment characteristics, such as excessive workload.

Job control may not always be regarded as a professional "nicety" but rather as a workplace "necessity" that may result in a lack of collegiality and cooperation, leading to higher levels of job stress. Nurse-midwives might perceive higher job control as a stressor if they are assigned extra responsibilities with decision-making, such as being the nurse in charge of the shift or scheduling work shifts for colleagues, as a consequence of perceived job control and competence by supervisors. This effect is consistent with the Vitamin Model.³⁹ The physiological effect of vitamin intake is that initial vitamin consumption produces beneficial health effects; but after a certain point, there is no further improvement or, perhaps, worsening health. Work characteristics, such as job demands and decision latitude, have beneficial effects up to a limit, but beyond that point, the effect has either diminishing returns or negative gains.

We found that job support had a significant direct positive effect on job control and an indirect effect on job stress among nurse-midwives through job control. Theorists posit that job support is inversely related to job stress (although we found no significant effect).¹⁸ Previous studies have shown that better job support reduces job stress among nurses in China² and nurses in Japan in that support from supervisors can decrease depressive symptoms and prevent the intention to leave work.^{40,41} Thus, our findings of an indirect effect partially supported the theory proposition.

A possible explanation for the finding could be that job support functions primarily when employees perceive they are supported. Job support does not directly affect job stress on its own but requires mediators to inform how job support affects job stress. Nurse-midwives would need to acknowledge how job support from supervisors and colleagues affects their job stress. Job support may moderate the relationship between authority decisions and the skill discretion of nurse-midwives. For example, if nurse-midwives receive strong job support from supervisors and colleagues, such as recognition, promotion, continuous education, and skill training, they will feel more secure and have better skill discretion in their job, including support and acceptance of their decisions and actions.42 Thus, job support improves skill discretion and decisional authority of nurse-midwives. Job support may moderate the relationship between job autonomy and skill decision.18

5. Conclusions

Nurse-midwives in Thailand who confront high job demands and limited job control are more vulnerable to experiencing job stress. Job support does not directly affect job stress but influences it through perceived job control. Initiatives for reducing job stress among the nurse-midwives should focus on balancing job demands while also improving job control and support.

Limitations

The limitation of this study is that the data were gathered from the specialty of Thai nurse-midwives. As such, it should be noted that there may be different results between different groups of other specialties (e.g., emergency nurses and critical care nurses). Another limitation is that the cross-sectional design has limitations in causal inferences because it was done at a single time point, but the stress level may change over time due to changes in the situations, such as in the COVID-19 pandemics.

Ethical approval

This study was approved by the institutional review board (IRB), Burapha University (#G-HS 003/2563), and

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also by the IRBs of each of the 16 regional hospitals. Written informed consent was obtained from all the participants prior to data collection.

Conflicts of interest

All contributing authors declare no conflicts of interest.

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