Predictors of Work Stress among Psychiatric Nursing Staff in Rural and Urban Settings in Taiwan

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Abstract

Aim: The aim of this study was to compare the work stress of nursing staff in urban and rural areas of Taiwan and to explore the predictors of work stress in nurses in Taiwan.

Method: In this cross-sectional study, purposive sampling was adopted to select 271 nursing staff members from 2 psychiatric teaching hospitals. The Emotional Quotient Inventory (Sun, 2004) and the Nurse Stress Checklist (Tsai & Chen, 1996) were used to perform this study. A hierarchical multivariate regression model was used to examine significant predictors of work stress.

Results: The work stress of nursing staff in urban hospitals was lower than that of nursing staff in rural hospitals. Compared with the urban nursing staff who participated in the EQ and stress classes, the rural nursing staff, regardless of whether they had attended the classes, experienced more work stress; and hospital types, employment patterns, years of work experience, and emotional intelligence were predictors of work stress.

Conclusion: Overall, the findings demonstrate that administration managers must provide effective career advancement measures (eg, offering full-time jobs) or increase salaries to recruit sufficient nursing staff. In addition, managers could avoid unfair treatment experienced by part-time nursing staff by placing additional emphasis on the basic welfares and salaries of nursing staff to effectively mitigate the stress that they experience.

Keywords: psychiatric nursing staff, work stress, emotional intelligence

1. Introduction

A shortage of clinical nursing staff has become a critical problem in Taiwan. A report issued by the National Union of Nurses' Associations (2015) indicated that the number of licensed nursing staff in Taiwan was more than two hundred and sixty-one thousand nurses, and the number of registered nursing personnel was less than one hundred and forty thousand. One hundred thousand certificated nurses had not engaged in nursing work. The data demonstrated that the lack of nursing staff is caused by a high turnover rate rather than by a lack of professional personnel. The loss of nursing staff causing increased workload and frequent overtime among currently employed nurses has become a common phenomenon. The high turnover rate in the nursing profession not only increased the costs that hospitals expend on training nurses, but also created a substantial threat to the healthcare of patients, diminishing the quality of patient care and elevating the business costs of hospitals (Chang, Lu, & Lin, 2010). The National Union of Nurses' Associations indicated that since October, 2008, the number of nurses currently practicing this profession in Canada and the United States was 93.6% (Canadian Nurses Association, CNA) and 83.2% (Health Resources and Services Administration, HRSA). The percentages are relatively high compared with that of Taiwan. A shortage of nursing staff in Taiwan can ultimately influence the safety of patients (Twigg, Duffield, Thompson, & Rapley, 2010). In addition, increasing the workloads of nursing staff may increase the possibility of infection in hospitals, causing an increase in adverse patient outcomes (Yang, 2003). The outcome of nurse substitution depended on the assumed skills of substitute nurses. Differences between predicted outcomes of each strategy became more evident with increasing transmissibility

of the pathogen and with higher rates of nurse shortage (Ferrer *et al*., 2014). For each additional patient to which a nurse attends, the mortality rate of patients within 30 days following hospitalization increases by 7% (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). Previous studies have indicated that the low employment rate among nurses is correlated with work stress. Work stress might affect an individual's well-being. The work of nursing is considered as one of the most challenging and stressful occupations. Studies have found that the main stressors in nursing work include conflicts in relationships with other colleagues, unfriendly management, style of the supervisor, lack of executive support, the need to respond to the emotions of patients and their families, facing patients' death, rotating working shifts, and lack of reward (Lim, Bogossian, & Ahern, 2010).

The work stress of nursing staff have proposed that social support, communication with other professionals, support from supervisors, work context and management, work atmosphere, and workload are related to the work stress of nursing staff (Hamdan-Mansour, Al-Gamal, Puskar, Yacoub, & Marini, 2011; Tuvesson, Eklund, & Wann-Hansson, 2012). Work stress causes nursing staff to resign from their jobs. Past studies have investigated which factors motivate nursing staff to remain in their profession, determining that opportunities for career advancement, social support, job satisfaction, and peer support are correlated with the intention to remain working for an organization (Wang, Chang, & Chu, 2006; Yin & Yang, 2002). Supervisor acceptance of subordinate advice also influences the willingness of nursing staff to remain in their job (Ribelin, 2003). In addition, numerous nursing staff members have indicated that the following measures for increasing their willingness to stay are the most crucial: reasonable salary and fringe benefits, leave and retirement systems, simplified work flow, and daycare centers for children and infants (Yin, Yang, & Liu, 2001).

After the implementation of the National Health Insurance (NHI) program in Taiwan in 1995, the opportunities for patients with psychiatric disorders to receive medical consultation from hospitals have increased. The number of beds for patients with psychiatric disorder has increased from 13 801 in 1995 to 20 910 in 2010, indicating that 7609 beds have been added for the past 15 years. As the number of beds increases, the number of psychiatric nursing staff also increased from 1763 to 4690 during this time period. Thus, there is an ever-present need to take care of patients with violent behaviors, which is likely to increase their workloads (Tuvesson *et al*., 2012).

Therefore, the types of patients and the complexity of the hospital division are also the sources of work stress. This study finding level of education, exposure to violence in the past 6 months, longer working experience, and working in psychiatric hospitals, emotional exhaustion, young age, social support were associated with high work-related stress (Leka, Hassard, & Yanagida, 2012; Qi *et al*., 2014). The literature review to investigate the complexity of the psychiatric nursing profession and the work stress of psychiatric nurses caused by a shortage of nursing staff. The purpose of this study was to compare the work stress of nursing staff in urban and rural areas of Taiwan and to investigate the predictors of work stress in nurses.

2. Methods

2.1 Participants

The research participants included psychiatric nursing staff from two public psychiatric centers in Taiwan, one in an urban area with a population of 2650000 and one in a rural area with a population of 300000. The subject 271 nurses. Nursing staff members are either permanently or temporarily employed, among which permanently employed employees have a guaranteed pension and leave period that increases by year, whereas temporarily employed employees receive less compensation, little or no fringe benefits, and no opportunities for advancement. All participants in this study are registered nurses. Excluding several part-time nursing staff.

2.2 Instruments

Emotional intelligence

This study modified the Emotional Quotient Scale by Sun (2004) according to Goleman's multiple intelligence theory. The Scale consisted of 5 dimensions, including knowing your emotions (5 items), managing your own emotions (4 items), motivating oneself (6 items), recognizing and understanding other people's emotions (3 items), and managing relationships (9 items), for a total of 27 questions. The Cronbach's α for each inventory ranged from .794 to .858. Cronbach's α for the entire inventory was .822.

Work stress

This study adopted the Chinese version of Nurse Stress Scale translated by Tsai and Chen (1996) from the Nurse Stress Scale established by Benoliel. The 4 dimensions of this scale included personal responses (16 items), work concerns (13 items), competency (11 items), and incompleteness of personal arrangement (3 items), for a total of 43 questions. Regarding the internal consistency of each dimension, Cronbach's α was between .84 and .94, and Cronbach's α was .93 for the entire inventory.

2.3 Research Ethics

This study was approved by the Institutional Review Board (98-04-02A). We explained the purpose and intended use of this study to participants, who had the right to refuse answering the inventory. They were allowed to withdraw during the research process at their own discreation.

2.4 Data Analysis

Data were analyzed by the SPSS 18.0 statistical package. Descriptive statistics including mean, standard deviation (*SD*), frequency and percentage were used to describe demographic data, emotional intelligent and work stress. Chi square and t-tests were used to examine the relationships between hospital areas and demographic data, emotional intelligent and work stress. A hierarchical multivariate regression model was used to examine significant predictors of work stress.

3. Results

3.1 Demographic Data of Participants

Table 1 shows the demographic data of the participants. The average age of the urban nursing staff was 33.71 years (SD = 8.15), which was significantly greater than that of the rural nursing staff at 30.91 years (SD = 7.50) ($t = -2.737$, $P = .007$). The levels of education ($P = .018$), employment patterns ($P = .002$), measures for career advancement ($P = .046$), and participation in EQ class ($P < .001$) and stress class ($P < .001$) of the nursing staff working in the 2 locations were significantly different. Most nursing staff members in the urban area were permanently employed, whereas staff members in the rural area were temporarily employed. The portion of urban nursing staff with N3 and N4 qualification was greater than that of the rural nursing staff. The number of urban nursing staff who had participated in EQ and stress classes was substantially less than that of the rural nursing staff. The nursing staff in both areas were typically single (57.8% vs. 69.2%). Urban nursing staff had an average of 10.68 years of work experience (SD = 8.00), whereas the rural nursing staff had an average of 8.85 years of work experience (SD = 7.64). Table 1 shows that the emotional intelligence of the urban nursing staff was significantly higher than that of the rural nursing staff ($t = -2.340$, $P = .020$), whereas the work stress of the urban nursing staff was significantly lower than that of the rural nursing staff ($t = 3.297$, $P = .001$).

Table 1. Demographic characteristics of psychiatric nursing staffs in rural and urban (*N*=271)

Variables	Urban (*n*=180)		Rural (*n*=91)		χ^2	*p*
	n	(%)	*n*	(%)		
Marital status					3.353	.067
Single	104	(57.8)	63	(69.2)		
Married	76	(42.2)	28	(30.8)		
Education level					8.058	.018
Junior college	68	(37.8)	46	(50.5)		
University	97	(53.9)	44	(48.4)		
Graduate school	15	(08.3)	1	(01.1)		
Employed pattern					9.525	.002
Regular employee	101	(56.1)	33	(36.3)		
Contractor	79	(43.9)	58	(63.7)		
Clinical ladder					3.994	.046
N0-N2	153	(85.0)	85	(93.4)		
N3-N4	27	(15.0)	6	(06.6)		
EQ class					14.447	<.001
Yes	49	(27.2)	46	(50.5)		
No	131	(72.8)	45	(49.5)		
Stress class					18.219	<.001
Yes	38	(21.1)	42	(46.2)		
No	142	(78.9)	49	(53.8)		
	Mean ± S.D.		Mean ± S.D.		*t*	*p*
Age	33.71 ± 8.15		30.91 ± 7.50		-2.737	.007
Age of the youngest child	9.32 ± 6.17		8.24 ± 5.03		-0.687	.495
age of the eldest child	10.15 ± 7.15		11.87 ± 6.76		0.986	.327
Yr of work	10.68 ± 8.00		8.85 ± 7.64		-1.807	.072
EQ total score	129.00 ± 98.36		94.92 ± 11.21		-2.340	.020
WS total score	122.49 ± 53.56		145.07 ± 52.60		3.297	.001

3.2 Associated Factors of Work Stress for the 2 Groups

Table 2 shows the difference in the level of work stress experienced by nursing staff with distinct demographic characteristics. For marital status, the difference in work stress was significant ($F = 10.224$, $P < .001$). Using Scheffe's post comparison showed that the work stress of unmarried nursing staff in both hospitals ($P = .006$ and $P < .001$) was significantly higher than that of married nursing staff. Regarding participation in EQ class ($F = 6.562$, $P < .001$) and stress class ($F = 5.333$, $P < .001$), the difference in work stress was significant. The Scheffe's post comparison revealed that the work stress of rural nursing staff, regardless of whether they had attended EQ and stress classes, was higher than that of urban nursing staff who had participated in EQ and stress classes. The difference in amounts of work stress from employment pattern ($F = 7.094$, $P < .001$) in both hospitals. The finding permanently employed urban nursing staff had a lower level of stress than did the

temporarily employed nurses in both areas.

The work stress difference from employed pattern ($F = 7.094$, $p < .001$) in both hospitals. The permanently employed of urban area had a lower level of stress than temporary employed nurses of both areas.

Table 2. Differences in work stress score by demographic and work characteristics of psychiatric nursing staffs in urban and rural hospitals ($N = 271$)

Variables	Work stress score					
	Urban (n=180)		Rural (n=91)		F	p
	Mean	S.D.	Mean	S.D.		
Marital status					10.224	<.001
Single	134.24	50.70 ①	154.16	48.34 ②	①②>③	
Married	106.41	53.51 ③	124.61	56.84 ④		
Education level					3.426	.005
Junior college	110.99	54.01 ①	147.83	55.16 ②	②>①	
University	131.00	52.77 ③	142.61	50.83 ④		
Graduate school	118.93	45.94 ⑤	126.00			
Clinical ladder					5.153	.002
N0-N2	125.93	53.14 ①	145.72	52.75 ②	②>③	
N3-N4	103.00	52.72 ③	135.83	54.38 ④		
EQ class					6.562	<.001
Yes	104.80	53.83 ①	150.35	54.08 ②	①<②④	
No	129.11	52.14 ③	139.67	51.09 ④		
Stress class					5.333	<.001
Yes	105.53	49.82 ①	146.60	51.34 ②	①<②④	
No	127.03	53.78 ③	143.76	54.16 ④		
Employed pattern					7.094	<.001
Temporary (n=137)	135.46	51.81 ①	150.12	49.83 ②	②>③	
Permanently(n=134)	112.35	52.96 ③	136.18	56.86 ④	①>③	

3.3 Predictors of Work Stress of Psychiatric Nursing Staffs in Urban and Rural Areas

To investigate how well hospital area, employed pattern, EQ class, stress class, married, clinical ladder, and year of work predict work stress scores, when controlling 7 variables, a hierarchical linear regression was computed. Means and standard deviations are presented in Table 3. When hospital area (p=3.127, p=.002), employed pattern (t=2.363, p=.019), and year of work were entered (t=-4.276, p<.001), it significantly predicted work stress, F=7.61, P<.001, adjusted R=.17. However, as indicated by the R, only 17% of the variance in work stress could be predicted by knowing the hospital level, employed pattern, and year of work. The entire EQ total scores of variables significantly predicted work stress, F=15.75, $P<.001$, adjusted R=.33. Presented in Table 3, suggest

that, when entered with hospital level, employed pattern, and year of work, and EQ total scores contribute most to predicting work stress, with all variables significantly contributing the model.

Table 3. Regression analysis for work stress (*N*=271)

	B	*SE*	*Beta*	*t*	*p*	95% CI Lower	Upper
Model 1							
(Constant)	135.04	15.14		8.921	<.001	105.23	164.85
Hospital area	21.57	6.90	.188	3.127	.002	7.99	35.15
Employed pattern	24.13	10.21	.223	2.363	.019	4.02	44.23
EQ class	.48	9.21	.004	0.052	.958	-17.65	18.61
Stress class	5.11	9.64	.043	0.530	.597	-13.88	24.10
Married	-16.01	8.22	-.144	-1.949	.052	-32.19	0.17
Clinical ladder	-5.60	10.16	-.034	-0.551	.582	-25.59	14.41
Yr of work	-2.67	.62	-.389	-4.276	<.001	-3.89	-1.44
$R^2 = .168$, Adj $R^2 = .146$, $F = 7.609$, $p < .001$							
Model 2							
(Constant)	323.55	27.80		11.64	<.001	268.81	378.28
Hospital area	15.07	6.28	-.131	-2.398	.017	2.69	27.44
Employed pattern	19.23	9.24	-.178	-2.08	.038	1.04	37.42
EQ class	-.06	8.31	.000	-.007	.994	-16.43	16.31
Stress class	4.77	8.71	.040	.547	.585	-12.38	21.91
Married	-10.90	7.45	-.098	-1.463	.145	-25.56	3.77
Clinical ladder	.25	9.20	.002	.027	.978	-17.87	18.37
Yr of work	-2.14	.57	-.313	-3.781	<.001	-3.26	-1.03
EQ_ total	-10.60	1.36	-.412	-7.788	<.001	-13.28	-7.92
$R^2 = .325$, Adj $R^2 = .304$, $F = 15.749$, $p < .001$							

4. Discussion

4.1 Associated Factors of Work Stress for the 2 Areas

This study determined that unmarried and temporarily employed nursing staff with few years of work experience had low scores for emotional intelligence and high scores for work stress. The result is consistent with previous findings that total tenure in the nursing profession, tenure at the psychiatric division, and emotion-orientated coping behavior are significantly correlated with levels of overall stress (Chang *et al*., 2003, Leka *et al*., 2012). Experienced nurses are typically older and have been promoted to full-time positions, and thus are more skilled at managing their work and are less susceptible to work stress. Moreover, the work stress of urban nursing staff who had participated in EQ classes was significantly lower than that of the rural nursing staff who had or had not participated in EQ classes. This result is similar to that of foreign research, which examined the emotional intelligence and stress of nursing staff and determined that participants with high emotional intelligence perceived low levels of work stress (Augusto, López-Zafra, Pilar Berrios, & Aguilar-Luzón, 2008). Urban nursing staff have convenient access and are receptive to information about stress management classes. In addition, urban nurses feel the need to advance in their career; therefore, they tend to participate in such classes to learn to manage their emotions and thereby improve their work performance (Kuo, Huang, & Chen, 2005). This study determined that rural psychiatric nursing staff, irrespective of whether they had attended EQ and stress classes, had higher levels of work stress compared with that of urban nursing staff, indicating the existence of other crucial factors causing nurses to experience stress. By investigating work stress, this study provided an insight into the current situation regarding the shortage of nursing staff in Taiwan. A sufficient number of nursing personnel is a crucial factor for the level of work stress that nurses experience; particularly in rural areas where a shortage of nurses has been a perpetual problem. Moreover, the lack of nursing staff and job dissatisfaction are the primary reasons forcing nurses to resign (Cramer, Nienaber, & Helget, 2006). In a previous study focusing on

participants with nursing as their first job, the results showed that 37% of the participants resigned within the first year, and 57% resigned within 2 years. The reasons for resigning were primarily related to the high ratio of patients to caregivers (Bowles & Candela, 2005). Streamlining available nursing personnel causes a shortage in nursing staff, and affects the rate of employee retention, directly influencing the willingness of new nursing graduates to work in the nursing profession. Because this younger generation of nurses refuses to participate in nursing jobs, the employment rate of nurses in Taiwan (59.2%) is lower than that in Western countries (80%). Moreover, the work stress of nursing staff working in an urban area with a population of 2 650 000 differed substantially from that of nursing staff working in a rural area with a population of only 300 000, suggesting that the ratio of patients to caregivers is one of the primary factors aggravating work stress in rural nursing staff.

4.2 Employment Pattern and Work Stress

This study determined that rural nursing staff who are temporarily employed had the highest level of work stress. Nursing staff can be hired as long as they fulfill the basic requirements of hospital personnel accreditation; therefore most rural nursing staff are only temporarily employed. This result is similar to that of Yeh, Ko, Chang, and Chen (2007), who indicated that compared with permanent nursing staff, temporary nursing staff have higher work stress and lower organizational commitment. This difference in attitude between permanent and temporary employees is attributed to unequal treatments, such as low salaries and fringe benefits (Yeh *et al*., 2007). Since the implementation of the NHI program in 1995, hospitals began to replace permanent nursing staff with temporary employees to reduce personnel costs. However, the difference in the welfares provided caused temporary nursing staff to exhibit a low organizational commitment, which increases the rate or resignation.

4.3 Predictors of Work Stress

This study determined that hospital area, employment patterns, total years of work experience, and total score for emotional intelligence predicted the work stress, indicating that more years of work experience yielded lower levels of work stress. This result is similar to previous findings, which showed that experienced nursing staff members are less susceptible to work stress (Chang *et al*., 2003; Wang, Huang, Lu, & Ho, 2007). This result may be related to the clinical nature of the nursing profession because factors such as the accumulation of work experiences and improvements in work management can help nursing staff to effectively utilize their surrounding resources to solve problems, thereby lowering work stress. The results showed that hospital location and employment pattern significantly predicted work stress. The urban hospital selected for this study is located in a city with a population of 2 665 833 and an area of 2 717 997 km^2. The number of employed nurses in this urban area is 13 507 (Department of Budget, Accounting and Statistics, Taipei City Government, September, 2012). However, the rural hospital chosen for this study is located in a city with a population of 336 485 and an area of 46 285 714 km^2 in which 1210 nurses are employed (Hualien County Government, March, 2012). According to the World Health Organization (2002), the location of hospitals also creates an imbalanced distribution of medical resources. With convenient living facilities and effective educational environment for children, urban hospitals can recruit personnel more easily. By contrast, rural hospitals are provided with fewer resources and have a higher rate of temporary employment compared with urban hospitals. The low salaries and fringe benefits provided to temporary employees are incomparable to those of permanent employees, which hinders the recruitment of nursing staff in rural areas. Baernholdt and Mark (2009) mentioned the considerable difference in urban and rural nursing environments. Previous research indicated that work environment affects work stress, and insufficient resources and demanding workloads increase the work stress of nursing staff (Shirey, McDaniel, Ebright, Fisher, & Doebbeling, 2010).

Previous studies have attributed the causes of work stress among nursing staff to external and internal factors. External factors include work environment, hospital type, employment patterns, work context and management, atmosphere, and workload (Hamdan-Mansour *et al*., 2011, Tuvesson *et al*., 2012). Internal factors include age, total tenure in the nursing profession, tenure at the psychiatric division, and emotion-orientated coping behaviors (Chang *et al*., 2003). The study findings determined that strengthening internal factors, such as through attending emotion and stress management classes, failed to reduce the work stress perceived by nurses. However, improving external factors, such as increasing full-time job opportunities and providing nursing staff with guaranteed fringe benefits and favorable labor conditions, is an effective strategy for alleviating their work stress.

5. Conclusion

The insufficient number of available of nursing personnel is the primary reason for the demanding workload of nursing staff. Although attending classes for emotion management can help nursing staff to regulate work stress, but priority guaranteed labor conditions (eg, reasonable amounts of nursing personnel, permanent employment,

and increases in salaries) are required to reinforce the benefits obtained from these external factors. The distribution of nursing personnel in Taiwan is regulated by medical policies. To consider the work stress of nursing personnel and the safety of patients, the healthcare system must focus on the rationale behind human resource allocation and make appropriate adjustments through specific policy interventions. For example, the strategy for ameliorating nursing shortages must consider the differences in location and particularly the labor force behavior of rural nurses (Skillman, Palazzo, Keepnews, & Hart, 2006). Strategies such as higher salaries and special fringe benefits for nurses working in remote areas are required to retain nurses, and the provision for full-time job status will grant clinical nurses the opportunity for career advancement.

6. Limitations

The limitations of this study are as follows. First, considering labor and temporal factors, we adopted purposive sampling to select psychiatric nursing staff from 2 hospitals, one from an urban area and one from a rural area. Therefore, the results of this study are limited to the populations of these 2 areas. Second, a rural area is defined only by its population and area. The definition might be overly broad and may cause inconsistencies in hospital categorization and study results. To ensure data integrity, future researchers should clearly define the characteristics of urban and rural areas before recruiting participants from different areas.

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