

Factors Associated with Job Stress among Ambulance Nurses in Bangkok, Thailand.

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Abstract

OBJECTIVE: to explore the factors associated with job stress among the ambulance nurses in nine zones of Bangkok Emergency Medical Service (EMS).

MATERIALS AND METHODS: Multistage random sampling was conducted between December 2015 and February 2016. Two hundred and forty-five ambulance nurses of network hospitals in nine zones of Bangkok EMS who had at least 40 hours EMS training and at least six months work experiences on ambulance were selected as study samples. A self-administered questionnaire with specific questions to explore variables such as socio-demographics, work characteristics, general well-being, employee engagement, role and social support was used. Job stress was evaluated using the Karasek's Job Demand-Control model (JCQ). The predictive factors influencing job stress were analyzed by using Chi-square and multiple logistic regressions.

RESULTS: A total of 245 ambulance nurses were enrolled in the study. One third (33.5%) of ambulance nurses developed high work stress. A statistically significant association was observed between job stress and older age (OR = 0.94, 95% CI: 0.89 - 0.99), higher incomes (OR = 0.26, 95% CI: 0.09 - 0.69), higher education level (OR = 4.17, 95% CI: 1.13 - 15.47), more work experience (OR = 0.32, 95% CI: 0.12 - 0.88), perception of urgent task (OR = 8.00, 95% CI: 1.44 - 44.73), poor general well-being (OR = 2.36, 95% CI: 1.00 - 5.55), low superior support (OR = 12.50, 95% CI: 4.62 - 33.78), low peer support (OR = 3.27, 95% CI: 1.30 - 8.21), role ambiguity (OR = 12.45, 95% CI: 4.77 - 32.51), and role conflict (OR = 14.48, 95% CI: 5.14 - 40.82).

CONCLUSION: The executive and nursing administrators should be aware of job strain among ambulance nurses particularly in the younger age group with less than 5 years of working experience. Specific training programs with supervision and peer support should be provided. Stress management should be commenced in nursing education. The clarity of role and duty together with appropriate work schedule should be considered to avoid the stressful situation which in turn will reduce job stress. This study is the first investigation that quantifies the strength of association between job stress and the various factors among ambulance nurses, thereby enabling the management to implement logical and preventive strategies regarding work-related stress and improve the quality of care in the future.

Keywords: job stress, ambulance nurse, quality of working life, social support, role ambiguity, role conflict, emergency nurse

Recently, the socio-economic development, from an industrial perspective has transformed a lot. This rapid change affects the pattern of living of every occupation. The nursing professional, in particular, is one among healthcare professionals that tends to get occupational stress physically and emotionally-facing with patient's suffering, pain, and even death.¹ Additionally, advances in medical technology apparently create more expectations and demand for nursing services.² The nurse is socially alerted not only to adapt their competencies and attitudes but also to cope with the professional risks he/she is faced with. These could be a stem of anxiety, resignation, changing to another field of nursing service, or even stop nursing practice that impacts nursing system nationwide. The remaining nurses could develop job-induced stress and enhance mental impairment by 61.7%.³ Apart from influencing personal health; job stress could impair work performance due to deterioration of decision-making skill which directly impacts service provision and operations. Moreover, job stress

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attenuates interpersonal relationships resulting to boredom and inadequate intention to work, thereby decreases satisfaction and feelings of responsibility in professionalism.⁴

Highlight on the emergency nurse working in an emergency ambulance, according to annual report of the Emergency Medical Institute of Thailand in the year of 2013, indicated that there were 1.2 million calls for emergency ambulance of which 62% (765,076 cases) were rescued by emergency nurses.⁵ They have provided care for patients with critical or life-threatening illnesses either physically or mentally. In order to save the patient's life, the roles of emergency nurse include evaluating the severity of illness, providing basic and/or advanced life support with prompt medical equipment and medical supplies, together with monitoring clinical parameters that are very dynamic and able to change in every single minute. At hospital arrival, the emergency nurses are responsible for continuing standard care until patients are admitted and all information are handed over to another professional care team. During rapid changes in the healthcare system and medical technology, the scope of care services for accident and emergency patients requires sufficient flexibility in response to changes.⁶ Working as ambulance nurses is at risk for physical injury, work environment, needlestick and sharps injuries, infectious contamination, and sense of urgency; all of these influence quality of life and are potential for job strain. Statistics regarding emergency vehicle accidents in Thailand are not available, but there is increasing evidence reported in the public media recently. Most accidents occurred during ambulance transports when "lights and sirens" are being used. Although accidents involving emergency vehicles are rare but have resulted in serious injury or death for the patients and also healthcare workers which could increase anxiety and stress of ambulance nurses while on duty. A study in 2008 by Sawangdee K³ reported that 48.3% of Thai nurses had ergonomic and musculoskeletal disorders such as back pain, traumatic muscle injury, followed by 45.5% who had high degree of job strain due to day-night work shift, whilst one-third of nurses were found to have sleeping disorders.

Earlier research on job stress has mainly focused on job content related risk factors, such as job demands, decision latitude and social support, which were all demonstrated to be correlated with job strain. However, to the best of our knowledge, the association between job stress and work environment as well as the quality of working life, which can be seen as a more extreme negative psychosocial contextual work situation in particular among ambulance nurses, has not yet been thoroughly investigated. The fundamental information from this study will assist in further action plans of preventing work-related stress as well as promoting of better workplace environment for ambulance nurses.

Materials and Methods

Study population

A Cross-sectional survey was conducted to examine the relationship between socio-demographics, work characteristics, general well-being, employee engagement, role, and social support factors and job stress. The study sample included ambulance nurses of network hospitals in nine zones of Bangkok EMS who had at least 40 hours EMS training and at least six months work experience on ambulance. Data were collected between December 2015 and February 2016. A total of 440 ambulance nurses of network hospitals in nine zones of Bangkok EMS were considered as the study population. The expected prevalence of occupational stress was approximately 45%.³ The sample size was calculated by using a formula to estimate prevalence⁷ with significance level at 5%. The minimum calculated sample size was 204 ambulance nurses. To compensate for 20% potential loss, 245 ambulance nurses were randomly selected (multistage sampling) for the study sample.

Data collection

Data were collected using a self-administered questionnaire, including standardized measures for individual and sociodemographic variables, work characteristics, general well-being, employee engagement, role, and social support.

Dependent variable

Work-related stress was assessed based on Job Demand-Control (JDC) model⁸ using Thai-Job Content Questionnaire (JCQ).⁹ The questionnaire measures eleven items of job demands, which related to mental workload, organization restrictions on task completion and conflicting demands and twelve items of job control, which consisted of 2 subscales: skill discretion or the level of skill and creativity required on the job and decision authority or the possibilities for workers to make decisions about their work. Items of JCQ were scored on a five-point Likert-type scale, ranging from 1 = strongly disagree to 5 = strongly agree. The Cronbach's α of job demand and job control scale was 0.77 and 0.87, respectively. According to Karasek's JDC, then each job demand and control variable generated a score by adding the points assigned to each question, and this score was dichotomized into "low" and "high" categories according to the mean. Subsequently, these groups were combined to define the four quadrants of the demand-control model: high strain (high-demand and low-control jobs, corresponding to the quadrant with higher exposure to occupational stress), passive job (low-demand and low-control jobs), active job (high-demand and high-control jobs), and low-strain (low-demand and high-control jobs), with the last three corresponding to low strain.

Independent variables

The socio-demographic variables included age, sex, education, and monthly income and the work characteristics included type of hospital, job position, length of current work, work hours, shift work, and perception of urgent task were established. The quality of work life factors included general well-being and employee engagement was measured applying the Thai-Work-Related Quality of Life Scale (WRQLS).¹⁰ Items of WRQLS were scored regarding feelings or opinions on a five-point Likert-type scale, ranging from 1 = never to 5 = very high. The Cronbach's α of general well-being and employee engagement scale was 0.82 and 0.84, respectively. The social support in the workplace was measured using Thai-Job Content Questionnaire (JCQ).⁹ which consisted of the sum score of 2 subscales, each containing 4 items: superior support and peer support. The Cronbach's α of the 2 subscales of social support was 0.89 and 0.84, respectively. The role factor was established based on the concept¹¹ of using a standardized questionnaire which translated into Thai by Mr. Veerawat Thangthum.¹²⁻¹³ The questionnaire measures six questions on role ambiguity and eight questions on role conflicts. Items of role factors were scored on a five-point Likert-type scale, ranging from 1 = strongly disagree to 5 = strongly agree. The Cronbach's α of role ambiguity and role conflicts scale was 0.83 and 0.80, respectively.

Statistical analyses

All statistical analyses were performed using the Statistical Package (SPSS) software version 18.0 for Windows. Descriptive data were presented as number, percent, mean, and standard deviation (SD). To determine possible associations between occupational stress (considering the high strain quadrant) and the other variables, the chi-square test or simple logistic regression was used. All significance variables in the chi-square test were modeled to calculate adjusted odds ratios by the multiple logistic regressions. Significance was set for a $p < 0.05$ level. The role factor was established based on the concept¹¹ of using a standardized questionnaire which translated into Thai by Mr. Veerawat Thangthum.¹²⁻¹³ The questionnaire measures six questions on role ambiguity and eight questions on role conflicts. Items of role factors were scored on a five-point Likert-type scale, ranging from 1 = strongly disagree to 5 = strongly agree. The Cronbach's α of role ambiguity and role conflicts scale was 0.83 and 0.80, respectively. This study has been approved by the Human Research Ethics Committee of the Faculty of Public Health, Mahidol University.

Results

A total of 245 ambulance nurses were approached, with recruit rate of 100% who participated and completed

questionnaires. Table 1 detailed socio-demographic variables of participants. The ratio of male: female was 1: 2.2. The mean age was 32.4 ± 6.2 years old. The majority of educational level was Bachelor's degree (90.2%). Most participants (54.7%) had working experience of more than 5 years and reported of having urgent task (88.2%). Regarding quality of working life, 53.9% had high employee engagement while 52.2% had low general well-being. For social support and role factors, most of the study sample had low superior support (52.2%) and high peer support (56.3%), low role ambiguity (54.3%), and high role conflict (55.1%). Regarding job content factors, most of the ambulance nurses were found to have low job demand (54.3%) ($\bar{x} = 23.7$, $SD = 6.2$) and low work control (50.6%) ($\bar{x} = 20.9$, $SD = 5.6$).

Table 1: Socio-demographic variables of participants (n = 245)

| Variables | n(%) |
|----------------------------|------------|
| Age (Years): Mean (SD) | 32.4 (6.2) |
| Gender | |
| Male | 76 (31.0) |
| Female | 169 (69.0) |
| Education | |
| Bachelor's degree | 221 (90.2) |
| Master's degree | 24 (9.8) |
| Working experience (Years) | |
| ≤ 5 | 111 (45.3) |
| > 5 | 134 (54.7) |
| Monthly income (Baht) | |
| $\leq 35,000$ | 152 (62) |
| $> 35,000$ | 93 (38) |
| Perceived urgent task | |
| Non-Urgent | 29 (11.8) |
| Urgent | 216 (88.2) |
| Employee engagement | |
| High | 132 (53.9) |
| Low | 113 (46.1) |
| General well-being | |
| High | 117 (47.8) |
| Low | 128 (52.2) |
| Superior support | |
| High | 117 (47.8) |
| Low | 128 (52.2) |
| Peer support | |
| High | 138 (56.3) |
| Low | 107 (43.7) |
| Role ambiguity | |
| High | 112 (45.7) |
| Low | 133 (54.3) |
| Role conflict | |
| High | 135 (55.1) |
| Low | 110 (44.9) |
| Job demand | |
| High | 112 (45.7) |
| Low | 133 (54.3) |
| Decision latitude | |
| High | 121 (49.4) |
| Low | 124 (50.6) |

Table 2 showed Karasek's job stress quadrants according to the demand-control model. Most ambulance nurses (33.5%) were classified in the "high strain" quadrant, which considered at higher risk for job stress, followed by the "low strain" quadrant (27.3%), "active" quadrant (21.2%) and "passive" quadrant (18.0%) (Table 3).

displayed the positive predictive factors that associated with job stress. There were five factors that had significant association with job stress: 1) socio-demographics, 2) number of year of work experience, 3) general well-being, 4) role, and 5) social support.

Table 2. Karasek's job stress quadrants according to the demand-control model (n = 245).

| Job Stress | n(%) |
|-------------|-----------|
| High Strain | 82 (33.5) |
| Low Strain | 67 (27.3) |
| Passive | 44 (18.0) |
| Active | 52 (21.2) |

Table 3. Association between job stress and socio-demographic, quality of working life, social support, as well as role characteristics, using the logistic regression analysis (n = 245)

| Variable | Crude model | | Adjusted model | |
|------------------------------|-------------|------------|----------------|------------|
| | OR | 95% CI | OR | 95% CI |
| Age (/1 year increase) | 0.96 | 0.92-1.05 | 0.94* | 0.89-0.99 |
| Education | | | | |
| Bachelor's degree | 1.00 | | 1.00 | |
| Master's degree | 3.83** | 1.59-9.19 | 4.17* | 1.13-15.47 |
| Monthly income (Baht) | | | | |
| ≤35000 | 1.00 | | 1.00 | |
| >35000 | 0.85 | 0.49-1.47 | 0.26** | 0.09-0.68 |
| Work Experience | | | | |
| ≤5 Years | 1.00 | | 1.00 | |
| >5 Years | 1.26 | 0.74-2.16 | 0.32* | 0.15-0.88 |
| Perceived urgent task | | | | |
| Non Urgent | 1.00 | | 1.00 | |
| Urgent | 3.53* | 1.19-10.52 | 8.02* | 1.44-44.73 |
| Employee engagement | | | | |
| High | 1.00 | | 1.00 | |
| Low | 0.87 | 0.51-1.49 | 0.43 | 0.17-1.07 |
| General well-being | | | | |
| High | 1.00 | | 1.00 | |
| Low | 1.70 | 0.99-2.92 | 2.36* | 1.00-5.55 |
| Superior support | | | | |
| High | 1.00 | | 1.00 | |
| Low | 1.92* | 1.12-3.29 | 12.49*** | 4.62-33.78 |
| Peer support | | | | |
| High | 1.00 | | 1.00 | |
| Low | 1.84* | 1.08-3.14 | 3.27* | 1.30-8.21 |
| Role ambiguity | | | | |
| Low | 1.00 | | 1.00 | |
| High | 5.32*** | 2.97-9.54 | 12.45*** | 4.77-32.51 |
| Role conflict | | | | |
| Low | 1.00 | | 1.00 | |
| High | 5.62*** | 2.99-10.53 | 14.48*** | 5.14-40.82 |

OR – odds ratio; CI – confidence interval.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Discussion

The present study aimed to assess the prevalence of occupational stress among ambulance nurses in the network hospitals in nine zones of Bangkok EMS and to identify potentially associated factors. According to Karasek's concept⁸, it was found that a greater number of ambulance nurses (33.5%) were in the "high strain" quadrant of the JDC model with a higher level of job demand, a lower level of control, which they are considered to be at greater risk of job stress. The explanation is based on the fact that work characteristics of ambulance nurse have high demands with urgent tasks and constant confront to job strain due to handling with the life-threatening condition or death, while they hardly control their work independently. This concurred with the job stress theory in the JDC model which reported high psychological demand but low control or decision latitude. The result was in accordance with previous reports of a higher stress level for nurses working in critical care units in comparison with those working in other medical services¹⁴

In contrast to other studies^{15,16} regarding predictive factors that affect job stress, our study found that younger and less experienced ambulance nurses tended to have higher job strain than the older ones, which may be because of having low decision-making ability while working under high urgent and critical conditions. It had been reported that personal factors such as age were found to be positively correlated with maturity and experience, whereby maturity increased by age may create more understanding of professional characteristics and contexts of work. We believe that increase tolerance in work and adaptability skills are crucial for diminishing stress from work.¹⁷ Lower income was also another significant factor of job stress which is consistent with earlier studies.¹⁶ This may be explained by the fact that the more income, the better quality of live and more available budget on individual's stress management. Interestingly, we found a positive association between job stress and education which suggested that ambulance nurses with education higher than a bachelor's degree were found to have higher job strain. Studies have previously reported a negative impact of the level of education on job strain level. Specifically, nurses with additional education exhibited the highest job strain and perceived the lowest control level. It is an interesting result as there is a dearth of the available literature on the effect of the educational level on nurses' occupational stress. However, it was suggested that skill discretion, which increased with education, as the level of skill required, the ability to learn, to develop skills or use these skills creatively on the job, as well as the repetitiveness or variety of skills used on the job is usually observed as a key factor of job stress⁸

Concerning work characteristics, the study results found that perception of work under urgent situation was

associated with high job strain than the work without urgent perception. Perhaps, nurses with perceived urgent task felt more stressful roles which directly affects occupational stress. Practically, most operations in ambulance are performed outside facilities with high risk and limited medical instruments; more demand from service recipients while working and higher responsibility, in addition, nurses have to lead team members during each incident.

Poor general well-being was found to be significantly related to high job stress in ambulance nurse. This finding is in agreement with a previous study¹⁷ which reported that the better general living condition and work-life balance may influence emotional exhaustion and psychological demand which in turn reduce stress.

Low superior and peer supports were significantly associated with occupational stress, which generally confirms earlier research demonstrating social support as an important feature of the psychosocial work environment, which influences job strain of nurses.^{18,19} Low support was proposed as a risk factor for job stress in the way that workers fear asking for help when in problems, or needed special care and fairness in regard to their work. Furthermore, high support in the workplace was suggested to promote ability to communicate with understanding, praising and acceptance of one another, therefore support from supervisors and colleagues was able to help reduce job strain.⁸

Our study results also demonstrated that role ambiguity and role conflict were strongly associated with occupational stress, which is in line with earlier studies.¹³ Expectation, goal, clear role and duties from organization influenced work practice. In addition, decision authority signifies the ability of employees to make decisions regarding work. It has mainly been considered as a factor of stress for nurses because of feelings of perceived powerlessness and role conflict or ambiguity.⁸

Conclusion

Most ambulance nurses experience high level of job stress especially in younger age group with very little working experience (less than 5 years). Moreover, lower incentive with low supervision and no peer support during work are also factors affecting job strain. These findings suggested that relevant executive and nursing administrators should be aware of job strain among ambulance nurses. Specific training programs under supervision and peer support should be highly considered. Stress management should be commenced in the EMS nursing education. Moreover, the clarity of role and duty of the ambulance nurse should be provided. Appropriate work schedule should be customized to avoid the stressful situation, which in turn reduces job stress.

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