

Original article

Occupational stress and related factors among registered nurses at Relief and Community Health Bureau, Thai Red Cross Society

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Background: Previous studies have found that occupational stress affects work performance among registered nurses and causes a high turnover rate. The study of occupational stress levels and related factors can help prevent occupational stress impacting on physical and mental health. Also, it may help increase work efficiency and enhance the commitment to the organization.

Objective: To study the level of occupational stress and related factors among registered nurses at Relief and Community Health Bureau, The Thai Red Cross Society (RCHB-TRC).

Methods: This was a cross-sectional study conducted at the RCHB-TRC, Thailand. Data were collected from 133 registered nurses using self-administered questionnaires, Occupational Stress questionnaire, Factors Related with Occupational Stress questionnaire, and Social Support assessment.

Results: Most subjects were female. Approximately, 60.9% of the subjects had low, 23.3% had very low, and 15.8% had moderate level of occupational stress. Factors related to occupational stress were income sufficiency ($P < 0.01$), overall work factors ($P < 0.001$), and overall social support factors ($P < 0.001$). Work factors were positively correlated with occupational stress while social activity support, news and information support factor, and emotional support factors were negatively correlated with occupational stress.

Conclusion: These findings can be applied in reducing occupational stress of registered nurses by enhancing appropriate role-related factor and increasing emotional support.

Keywords: Occupational stress, social support, registered nurses.

Registered nurses have an important role in healthcare services and are considered the largest part of healthcare team in the health center.⁽¹⁾ Currently, the number of registered nurses working in public healthcare is 142,329 while 23,212 nurses working in private healthcare. Currently, the ratio of Thai citizen to registered nurse is 395:1.⁽²⁾ This situation causes stress and pressure in the healthcare system. Being a registered nurse requires a lot of responsibilities and abilities in multiple roles. They are required to work closely with patients 24 hours a day,

as a shift work.⁽³⁾ According to a research project of International Health Policy Program, the survey reveals that 45.5% of registered nurses suffer from a high level of occupational stress. The risk factors were the extended work shifts. Moreover, the high level of stress correlates with work injuries.^(4, 5)

RCHB-TRC is an organization helping disaster victims. This organization completely provides support before the disaster, during the disaster, and after the disaster. Relief aid to the destitute people, medical services, and healthcare services are also provided through 13 Thai Red Cross Society stations.⁽⁶⁾ Registered nurses operating in relief bureau are different from other health centers as they need an additional ability in disaster relief nursing and other essential skills such as decision making, problem solving, and critical thinking in order to be able to devise the plan to help disaster victims before, during, and after the disaster.⁽⁷⁻⁹⁾

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Since they have to operate their work under emergency situation, having long and uncertain work hours, requiring to be prepared all the time, and having to consistently interact with others, registered nurses at RCHB-TRC are interesting for this study. They have specific nursing duties, required skills, and expertise. According to their roles, they have to work with contagious disease and hazardous environment in the disaster area which can increase the level of occupational stress among them.

As the researcher works as a personnel of RCHB-TRC, the researcher is interested in conducting a survey on occupational stress and related factors to prevent and to reduce occupational stress that has an impact on registered nurses' physical and mental health as well as work efficiency, so that registered nurses will be able to operate their jobs more efficiently.

Materials and methods

A cross-sectional descriptive research design was employed. There were a total of 134 registered nurses working at RCHB-TRC during the study period. Krejcie and Morgan formula was used to calculate the sample size of 99 subjects. To prevent the error, all subjects working for at least six months at RCHB-TRC were recruited to participate in this study. Those who were on vacation or sick leave during the fieldwork period were excluded. The subjects were from 3 divisions of RCHB-TRC: Medical Services Division, The Relief Division, and The Coordination Red Cross Health Station Division and from 11 other provinces: Surin, Chiang Mai, Nakhon Ratchasima, Samut Prakan, Sa Kaeo, Ubon Ratchathani, Phetchaburi, Prachuap Khiri Khan, Nakhon Si Thammarat, Tak and Phang-nga. One hundred and thirty-three questionnaires were returned. This gave the survey an overall response rate of 99.3%.

The study has been approved by the Institutional Review Board (IRB) of the Faculty of Medicine, Chulalongkorn University (COA no. 492/2020).

All subjects were invited to provide information using the following questionnaires: 1) a demographic questionnaire; 2) occupational stress questionnaire form job stress questionnaire developed by Liangkobkit C. ⁽¹⁰⁾ (Cronbach's alpha = 0.89); this part contains 17 questions including 3 aspects: physical, mental, and behavioral aspects; 3) a questionnaire on related factors on occupational stress from the questionnaire on factors associated with stress of work

developed by Thongkaeo T. ⁽¹¹⁾ and Jitrangsarit S. ⁽¹²⁾ (Cronbach's alpha = 0.95) in which the scores between 1.50 - 2.49 indicate the tendency of low level of occupational stress. This part contains 47 questions including 8 aspects: work characteristic and responsibility factor, role-related factor, personnel relationship factor, organization characteristic factor, career advancement opportunity and morale factor, compensation and benefit factor, and work life balance factor; 4) Social Support Assessment developed by Baruch-Feldman C, *et al.*, ⁽¹³⁾ translated and adjusted by Singchongchai P, *et al.* ⁽¹⁴⁾ (Cronbach's alpha = 0.94). This part contains 20 questions divided into 4 aspects: emotional support, the scores between 19 - 25 indicate the high level, assessment support; the scores between 16 - 20 indicate the high level; news and information support; the scores between 24 - 30 indicate the high level, and social activity supports including financial or material aids; the scores between 19 - 35 indicate the high level. Overall scores that are higher than 74 indicate high level of social support.

The researchers adapted the Occupational Stress and Factors Related to it. These adaptations were consulted with 3 experts: a psychiatrist, a psychiatric and mental health nursing professor, and a senior professional registered nurse. The experts evaluated each question with Index of Item Objective Consistency, and the researcher revised the questions as suggested to get final questionnaires: occupational stress questions (Cronbach's alpha = 0.90), occupational stress related factors (Cronbach's alpha = 0.98). Furthermore, the researchers measured the social support assessment as well (Cronbach's alpha = 0.90).

Regarding the data collection, for the subjects working in Bangkok, the data were collected by the researchers. As for the subjects working in 11 other provinces, the data were collected by the help of clerical workers from each station who helped the researchers by collecting questionnaires and mailing them to the authors.

Statistical analysis

The analyses were conducted using the SPSS program version 22.0 considering $P < 0.05$ as significant difference. Statistical analyses of collected data included descriptive statistics used for describing the characteristics of the sample population such as number, percentage, mean \pm standard deviation

(SD): Student *t* - test and One-Way ANOVA were used for testing the difference among factors related to occupational stress. Pearson's correlation coefficients were used for examining the relationship among all variables. Logistics regression and predictive analysis were used for predicting the relationship between occupational stress and associated factors by using the Stepwise Multiple Regression Analysis.

Results

One hundred and thirty-three registered nurses at RCHB-TRC were selected as subjects. Among them, 97.7% were female, 47.4% were between 41 to 50 years old; 51.9% were married; 65.5% had Bachelor's Degree as the highest degree. Of all the subjects, 81.2% worked in The Coordination Red Cross Health Station Division; 69.2% had over

15 years of work experience; and 42.1% had over 15 years of work experience at RCHB-TRC. Most of them, 82.7% had their working hours ranged from 30 to 40 hours/week. Approximately, 37.6% of them had an average income between 35,001 and 45,000 baht per month; 85.0% had sufficient income and 54.9% were in debt.

The results showed that 60.9% of the registered nurses had the low level of occupational stress; 23.3% had the very low level, and 15.8 % had in the moderate level. No high and very high levels of occupational stress were found (Table 1).

The results showed that income sufficiency was correlated with occupational stress ($P < 0.05$) while there was no correlation between occupational stress and other personal factors (Table 2).

Table 1. Summary of occupational stress level on subjects divided into 3 aspects (n = 133).

| Occupational stress level in each aspect | Very low (100 - 1.49) | | Low (1.50 - 2.49) | | Moderate (2.50 - 3.49) | | High (3.50 - 4.49) | |
|---|--------------------------|------|----------------------|------|---------------------------|------|-----------------------|-----|
| | N | % | N | % | N | % | N | % |
| Physical aspect (Mean = 2.00, SD = 0.70) | 31 | 23.3 | 72 | 54.1 | 29 | 21.8 | 1 | 0.8 |
| Mental aspect (Mean = 2.20, SD = 0.80) | 24 | 18.0 | 66 | 49.6 | 36 | 27.1 | 7 | 5.3 |
| Behavioral aspect (Mean = 1.34, SD = 0.60) | 65 | 48.9 | 65 | 48.9 | 1 | 0.8 | 2 | 1.5 |
| Overall occupational stress (Mean = 1.92, SD = 0.62) | 31 | 23.3 | 81 | 60.9 | 21 | 15.8 | - | - |

Table 2. The correlation between occupational stress and personal factors tested by *t* - test and One-Way ANOVA.

| Personal factors | N (%) | Mean | SD | P - value |
|-----------------------------|------------|------|------|-----------|
| Gender | | | | |
| Male | 3 (2.3) | 1.65 | 0.21 | 0.363 |
| Female | 130 (97.7) | 1.93 | 0.54 | |
| Age (years) | | | | |
| 21 - 30 | 25 (18.8) | 2.11 | 2.00 | 0.557 |
| 31 - 40 | 19 (14.3) | 1.93 | 2.00 | |
| 41 - 50 | 63 (47.4) | 1.89 | 1.90 | |
| 51 - 60 | 25 (18.8) | 1.85 | 1.88 | |
| >60 | 1 (0.8) | 1.23 | 1.00 | |
| Marital status | | | | |
| Single | 52 (39.1) | 1.98 | 0.57 | 0.732 |
| Married and living together | 69 (51.9) | 1.91 | 0.52 | |
| Married and living apart | 3 (2.3) | 1.80 | 0.45 | |
| Divorced | 8 (6.0) | 1.76 | 0.52 | |
| Widows | 1 (0.8) | 2.29 | | |

Table 2. (Con) The correlation between occupational stress and personal factors tested by *t* - test and One-Way ANOVA.

| Personal factors | N (%) | Mean | SD | P - value |
|--|-----------|------|------|-----------|
| Highest degree | | | | |
| Bachelor's Degree | 87(65.5) | 2.02 | 0.58 | 0.160 |
| Master's Degree | 24(18.0) | 1.73 | 0.34 | |
| Specialty | 22(16.5) | 1.75 | 0.47 | |
| Division | | | | |
| The Relief Division | 12(9.0) | 2.06 | 0.51 | 0.524 |
| The Coordination Division | 108(81.2) | 1.92 | 0.54 | |
| Medical Service Division | 13(9.8) | 1.82 | 0.58 | |
| Total work experience | | | | |
| 1 - 5 years | 19(14.3) | 2.05 | 0.62 | 0.269 |
| 6 - 10 years | 16(12.0) | 1.87 | 0.62 | |
| 11 - 15 years | 6(4.5) | 2.33 | 0.52 | |
| Over 15 years | 92(69.2) | 1.88 | 0.63 | |
| Work experience from other workplaces | | | | |
| No experience | 61(45.9) | 1.90 | 0.54 | 0.618 |
| With experience | 72(54.1) | 1.95 | 0.53 | |
| Work experience at RCHB-TRC | | | | |
| 1 - 5 years | 35(26.3) | 2.09 | 0.61 | 0.110 |
| 6 - 10 years | 22(16.5) | 1.73 | 0.55 | |
| 11 - 15 years | 20(15.0) | 2.05 | 0.69 | |
| Over 15 years | 56(42.1) | 1.86 | 0.62 | |
| Work hours | | | | |
| 30 - 40 hours/week | 110(82.7) | 1.93 | 0.62 | 0.897 |
| 40 - 50 hours/week | 18(13.5) | 1.94 | 0.73 | |
| Over 50 hours/week | 5(3.8) | 1.80 | 0.45 | |
| Average monthly income | | | | |
| 15,000 - 25,000 baht | 27(20.3) | 2.09 | 0.60 | 0.305 |
| 25,001 - 35,000 baht | 37(27.8) | 1.91 | 0.55 | |
| 35,001 - 45,000 baht | 50(37.6) | 1.91 | 0.53 | |
| Over 45,000 baht | 19(14.3) | 1.79 | 0.39 | |
| Income sufficiency | | | | |
| Insufficient | 20(15.0) | 2.25 | 0.54 | 0.002* |
| Sufficient | 113(85.0) | 1.87 | 0.52 | |
| Debt | | | | |
| No | 60(45.1) | 1.89 | 0.53 | 0.376 |
| Yes | 73(54.9) | 1.96 | 0.54 | |
| Chronic disease | | | | |
| No chronic disease | 81(39.1) | 1.92 | 0.53 | 0.764 |
| Has at least one chronic disease | 52(60.9) | 1.95 | 0.56 | |

**P* < 0.01

The Pearson's correlation examined the correlation between occupational stress and factors related to it. The results showed that role-related factor ($r = 0.489$, $P < 0.001$), personnel relationship factor ($r = 0.468$, $P < 0.001$), organization characteristic factor ($r = 0.424$, $P < 0.001$), work characteristic and responsibility factor ($r = 0.420$, $P < 0.001$) work environment factor ($r = 0.409$, $P < 0.001$), career advancement opportunity and morale factor ($r = 0.401$, $P < 0.001$), compensation and benefit factor ($r = 0.376$, $P < 0.001$), and work life balance factor ($r = 0.355$,

$P < 0.001$) were moderate positively correlated with occupational stress.

Regarding the social support factors, the results showed that the social activity support factor ($r = -0.341$, $P < 0.001$), news and information support factor ($r = -0.315$, $P < 0.001$), and emotional support factor ($r = -0.287$, $P < 0.01$) were negatively correlated with occupational stress with statistical significance. There was no correlation between occupational stress and assessment support factor (Table 3).

Table 3. The correlation between occupational stress and related factors tested by Pearson's correlation.

| Variables | Mean | SD | Occupational stress | |
|--|------|------|---------------------|-----------------|
| | | | <i>r</i> | <i>P</i> -value |
| Overall work factors | 2.29 | 0.76 | 0.499 | <0.001* |
| Work characteristic and responsibility factor | 2.17 | 0.75 | 0.420 | <0.001* |
| Work environment factor | 2.13 | 0.79 | 0.409 | <0.001* |
| Role-related factor | 2.44 | 0.85 | 0.489 | <0.001* |
| Personnel relationship factor | 2.10 | 0.91 | 0.468 | <0.001* |
| Organization characteristic factor | 2.59 | 0.05 | 0.424 | <0.001* |
| Career advancement opportunity and morale factor | 2.32 | 1.06 | 0.401 | <0.001* |
| Compensation and benefit factor | 2.49 | 1.16 | 0.376 | <0.001* |
| Work life balance factor | 2.18 | 1.00 | 0.355 | <0.001* |
| Overall social support factors | 74 | 8.46 | -0.352 | <0.001* |
| Emotional support factor | 19 | 2.85 | -0.287 | 0.001** |
| Assessment support factor | 14 | 1.39 | -0.101 | 0.246 |
| News and information support factor | 23 | 3.11 | -0.315 | <0.001* |
| Social activity support factor | 18 | 2.95 | -0.341 | <0.001* |

P*<0.001, *P*<0.01

The multiple regression was used to predict the occupational stress. Factors that can predict the level of occupational stress among registered nurses include role-related factor ($\text{Beta} = 0.43, P < 0.001$), emotional support factor ($\text{Beta} = -0.19, P < 0.05$), and adequacy of income ($\text{Beta} = -0.17, P < 0.05$). Predictive factors accounted for 30.0% of occupational stress of registered nurses ($R^2 = 0.30$) (Table 4).

Discussion

The study found that the majority of the registered nurse had low level of occupational stress consistent with the previous studies of Liangkobkit C. ⁽¹⁰⁾ and Thongkaeo T. ⁽¹¹⁾ The result was different from Sawaengdee K, *et al.* ^(4, 5) which revealed that most of registered nurses had a high level of occupational stress and the risk factors were the extended work shifts. The reason for this discrepancy could be that

the study of Sawaengdee K, *et al* was conducted in a hospital setting and mainly with the majority of nurses working in wards. In normal situation, RCHB-TRC nurses are working on disaster preparedness and response phase during office hours so they do not need to work hastily. Moreover, most registered nurses have more than 15 years of work experiences (42.1%). The more experienced they are, the less stress they have as they developed specific operational skills, expertise, and they will be able to deal with unexpected situations.

Regarding the factors related to occupational stress, the income sufficiency was found being correlated in line with the previous studies of Runcharoen K. ⁽¹⁵⁾ and Thongkaeo T. ⁽¹¹⁾ Those who had insufficient income had a higher occupational stress level than those who had adequate income.

Table 4. The prediction of the occupational stress tested by Stepwise Multiple Regression Analysis.

| Predictor variables | Unstandardized Coefficients | | Standardized Coefficients Beta | <i>t</i> | <i>P</i> -value | 95% CI | |
|--------------------------|-----------------------------|------|-----------------------------------|----------|-----------------|--------|--------|
| | B | SE | | | | Lower | Upper |
| Role-related factor | 0.31 | 0.06 | 0.43 | 5.60 | <0.001 | 0.202 | 0.423 |
| Emotional support factor | -0.04 | 0.02 | -0.19 | -2.45 | 0.016 | -0.074 | -0.008 |
| Adequacy of income | -0.297 | 0.13 | -0.17 | -2.32 | 0.022 | -0.551 | -0.043 |
| Constant | 2.19 | 0.40 | | 5.56 | <0.001 | 1.410 | 2.968 |

R = 0.55 R² = 0.30 Adjust R² = 0.29 F = 5.3

B: non-standardized regression coefficient; Beta: standardized regression coefficient; SE: standard error; R²: squared multiple correlation coefficient of variance

The results showed that all work factors were correlated with occupational stress with statistical significance included:

Role-related factor

This result was similar to the study of Chawirun C.⁽¹⁶⁾, which found that registered nurses at RCHB-TRC in the current study are required to work in multiple roles and have specific knowledge which related to occupational stress.

Personnel relationship factor

This study was compatible with the study of Runcharoen K.⁽¹⁵⁾, factors related with the stress level of nurses was relationship among workers. Conforming to the National Institute for Occupational Safety and Health⁽¹⁷⁾, this study showed the correlation between these two factors as well.

Organization characteristic factor

In accordance with the study of Siangpror P, *et al.*⁽¹⁸⁾ that found the correlation between occupational stress and organization characteristic. Many factors from organization characteristic could cause occupational stress.

Work characteristic and responsibility factor

Comparing to the previous studies of health and work life balance of Thai registered nurses⁽⁴⁾ and Kokoroko E, *et al.*⁽¹⁹⁾, this current study found that high level of workload were associated with high level of job stress of registered nurses.

Work environment factor

This study was compatible with the study of Yau SY, *et al.*⁽²⁰⁾ that found nurses had a relatively high level of stress, with “Working Environment and Resources” and “Workload and Time”, the result was similar in the study of registered nurses in RCHB-TRC who have to work with the pressurized environment.

Career advancement opportunity and morale

This study showed the correlation between occupational stress and career advancement opportunity and morale. If there was an obstacle in career advancement or lack of opportunities, it could be the cause of stress.^(21, 23)

Compensation and benefits factor

The results from this study was consistent with previous study of Chawirun C.⁽¹⁶⁾, showing that compensation and benefit were related to stress as they were a part of job satisfaction. If the personnel receive inappropriate compensation and benefits, this could lead to stress or resignation.⁽²²⁾

Work life balance factor

Conforming to Pumfang S.⁽²²⁾, factors strongly affected to job stress were work life balance. If there was a conflict between work life balance, this inter-role conflict has been linked to psychological strain.⁽²³⁾

The social support factors

This current study showed the negative correlation between social support factor and occupational stress. Social support was an important factor to reduce stress and to cope stress appropriately.⁽²⁴⁾ The social support of registered nurses, therefore, should be increased. Emotional support would make them feel being a part of team and led to lower occupational stress level.

The factors that predicted occupational stress of registered nurses were role-related factor, emotional support factor, and income sufficiency. Adding multiple roles of the organization, decreasing emotional support, receiving insufficient income would increase the occupational stress. This current study is in line with the previous study of Thangthum W, *et al.*⁽²⁵⁾, the support from supervisors and the role ambiguity had ability to predict the occurrence of job strain. In conclusion, role-related factors, emotional support, and income sufficiency could lead to occupational stress.

Some limitations of this study must be considered. One of the most important problems is related to the type of epidemiological design, which makes it impossible to determine a temporal relation, and answers to some questions may be altered due to the presence of occupational stress. This study was a cross-sectional study gathering information from August to October 2020 during the outbreak of Coronavirus disease 2019 (COVID-19) situation which was still controllable in Thailand. If this study had been conducted in different period or collected during the new wave of COVID-19 outbreak, the result might be different. Additionally, work factors scores are interpreted based on a person’s perception of the occupational stress level. Therefore, it is not possible to conclude that work factors in each area are all direct causes of occupational stress with that work factor.

Conclusion

This study revealed that most registered nurses had low level of occupational stress. Factors related to occupational stress were income sufficiency, overall work factors (role-related factor, personnel relationship factor, organization characteristic, work characteristic and responsibility factor, work environment factor, career advancement opportunity and morale factor, compensation and benefits factor, work life balance factor), and overall social support factors (emotional support factor, news and information support, and social activity support). Factors that could predict the occupational stress of registered nurses were role-related factor, emotional support factor, and income sufficiency.

These results can be applied in reducing occupational stress of registered nurses by enhancing appropriate role-related factor and increasing emotional support.

Conflict of interest

The authors, hereby, declare no conflict of interest.

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