

## ORIGINAL ARTICLE

# Stress at the Helm: the Prevalence and Key Risk Factors of Occupational Stress Among Port Workers in the Port Terminal Industry

Norwahida Yaakub<sup>1</sup>, Nur Fazhilah Abdul Razak<sup>1</sup>, Mohd Rafee Baharuddin<sup>2</sup>, Mohd Azhar Mohd Noor<sup>3</sup>

<sup>1</sup> Faculty of Industrial Sciences and Technology, Universiti Malaysia Pahang Al-Sultan Abdullah, 26300 Kuantan, Pahang, Malaysia.

<sup>2</sup> Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Malaysia.

<sup>3</sup> Faculty of Health Sciences, Kampus Bertam, Universiti Teknologi MARA, 13200 Kepala Batas, Pulau Pinang

## ABSTRACT

**Introduction:** In Malaysia, there is a lack of data on the prevalence of occupational stress among port terminal workers. The study's goal was to find out how common and risky occupational stress was for those who worked at the port terminal. **Methods:** Designing a cross sectional structure was done at the port terminal. In order to determine the prevalence of occupational stress, the Job Content Questionnaire (JCQ) assesses four factors: social support, job uncertainty, psychological job demands, and decision latitude. **Results:** A remarkable 68.8 percent of workers reported experiencing some form of work-related stress, indicating a high level of occupational stress in the workplace. The age factor has shown a significant association with work-related stress among the sociodemographic factors (p-value =0.038). Social support (p-value =0.01), task (p-value =0.00), exposure (p-value =0.02), skilled work (p-value = 0.04), and organizational culture (p-value =0.00), and company culture were all found to be significantly linked to the risk of occupational stress. **Conclusion:** This study sheds light on the alarming prevalence of occupational stress among Malaysian port terminal employees. The identified factors, including age, social support, task-related aspects, exposure levels, specialized work involvement, and organizational culture, play crucial roles in defining the risk of occupational stress in this context. These results not only contribute to the current understanding of the issue, but also provide important insights for future research and interventions aimed at addressing and mitigating occupational stress among port workers.

Malaysian Journal of Medicine and Health Sciences (2024) 20(3): 68-74. doi:10.47836/mjmhs.20.3.10

**Keywords:** Occupational Stress, Risk Factors, Port Terminal

## Corresponding Author:

Norwahida Binti Yakub @ Yaakub, PhD  
Email: norwahidayaakub@umpisa.edu.my  
Tel: +6012-4417411

## INTRODUCTION

Psychosocial issues have become an integral part of occupational health and stress research, which incorporates risk concerns (1,2). One of the main types of group hazards in occupational safety and health is a psychosocial hazard. Sub-hazards are the kinds of hazards that cause both short and long-term strains (3,4). Over the past few years, not only have scientific researchers deemed it an important area of study, but numerous national governments have also emphasized and acknowledged the severity of the psychosocial impact on health, health behaviours, performance, effectiveness, and productivity of employees and organizations (5,6). Studies of occupational health

and stress have become increasingly concerned with the psychological aspects of the problem. Job strain is characterized by a combination of high job demands and control or decision latitude at the workplace, whereby occupational stress refers to the ongoing or escalating strain or stress that is experienced by an employee as a result of the responsibilities, conditions, environment, or other pressures that are associated with their place of employment (7,8). All workers experienced this situation in their industry, including the port terminal industry.

The government has recognized that the feeder service industry, which comprises port terminals, is one of the primary service sectors that contribute to economic growth (9). The port terminal industry is involved in hazardous work activities, such as operating cranes, lashing, vessel servicing, engineering, and prime mover driving, during container terminal operations (10,11). There are ports in Malaysia that are ranked among the top in the world for the year 2019 (12). Even in

the midst of the pandemic, Malaysia has managed to maintain its position in the rankings of countries with the highest levels of port efficiency. For the years 2020-2021, Malaysia was listed in a ranking that increased the number of container outputs. The result is that our port has been recognized for having the well-organized and efficient operations among twenty-two worldwide port players. For instance, the capability of vessel servicing and handling an average of 131 ships per week. The hectic and critical activities may contribute to occupational stress.

This problem is a silent killer in the working environment and a crucial issue to look forward to in the port worker population, where work satisfaction is low and turnover rates are high (13,14). Since port workers have not yet received adequate attention and are not exposed regularly to this type of work environment, it is crucial to comprehend how work-related occupational stress affects them and know the underlying causal-effect relationship. The risk factors aimed at contributing to occupational stress are social support, tasks, recognition, exposures, stability, skilled work, organizational cultures, and responses from customers. This study was conducted to determine the prevalence and risk factors of occupational stress among port workers.

## **MATERIALS AND METHODS**

### **Study design & participants**

A cross-sectional study was conducted at Malaysia's port terminal. Simple random sampling was used to select participants within four major ports in Malaysia. The selection of the study location involved careful consideration of several variables, including its representativeness, relevance, access considerations, comparative advantage, ethical and legal considerations, and previous research. Using validated self-administered questionnaires, data was gathered. The study population includes port terminal workers with certain occupational characteristics. Instead, this group's population is small and well-defined, allowing us to study a significant portion of the population. Thus, the study sample represents a large portion of the population. A larger sample size was used to improve the demographic estimation of variables and include more population experience. Due to time and money constraints, 304 samples were chosen for this study. Inclusion criteria based on age range from the minimum working age in Malaysia to the retirement age; all port workers can speak and use dwt-language; and they must complete one year at the port to gain experience.

### **Questionnaire**

Standardized and previously tested questionnaires written in Bahasa Malaysia were utilized (15,16). The validators of the Malay translations of the Job Content Questionnaire (JCQ) have given their approval for the questionnaire to be used in this study. The respondents

were also asked for socio-demographic data on their age, ethnicity, marital status, level of education, monthly income, and duration of employment. Operationalized variables of interest using Robert Karasek's Job Demands-Control Model quadrants. Psychological job demand uses questions on respondents' mental and emotional workload. Questions assess decision latitude, which includes authority and skill discretion. The questions assessed participants' control over their duties, ability to use their talents, and autonomy in making work decisions. This study's main outcome variable, job strain, was estimated from psychological job demand and decision latitude (17). The total number of questionnaires is 72. The Job Content Questionnaire (JCQ) assesses four factors: social support (23 questions), job uncertainty (16 questions), psychological job demands (15 questions), and decision latitude (18 questions).

### **Job Content Questionnaire**

Job strain and related organizational job factors were measured using the validated Malay version of the Job Content Questionnaire. Based on the questionnaire, four job factors were selected as dependent variables: decision latitude, psychological job demands, job insecurity, and social support. In this study, specific job factors, such as toxic exposure, physical isometric load, and muscle ache, were analyzed as independent variables. The questionnaire was used to collect this information (15,16).

The questionnaire in Malay was created using the recommended format, and the answers to each question were scored using the Likert scale, which ranges from 1 to 4 (strongly disagree, disagree, agree, and strongly agree). The formulas for the construction of the job content instrument scale are provided in the user guide and questionnaire for operationalized variables of interest using Robert Karasek's job content, and these formulas were used to calculate each job factor. It serves a specific purpose in the framework of Robert Karasek's Job Content Questionnaire (JCQ). This study gained insight into how these variables are quantified based on their responses to the questionnaire items by presenting the formulas. Transparency in the evaluation process can be boosted because this study uses a standardized questionnaire to assess the questionnaire's reliability and assist respondents in understanding the relationship between their responses and the resulting scores for each job factor. The presence or absence of job strain was determined by combining two of the organizational job factors, namely psychological job demand and decision latitude. These two factors were used to determine whether or not there was job strain.

The combination of a high psychological demand and a limited amount of decision latitude was what determined the level of job strain, which was high. High job strain was caused by a combination of high psychological

demands and a lack of decision latitude. "Non-high strain" meant that the population who filled out the questionnaire had not experienced a lot of stress at work. They were then divided into three groups (low strain, active job, and passive job). Low psychological demand and high decision latitude were the determinants of "low strain," while high psychological demand and high decision latitude were the determinants of "active jobs" (18, 19). The idea of a "passive job" came from the fact that it was easy to do and did not require much thought.

### Pre-Test

The instruments for this study went through a procedure called the pre-test phase. Small samples that are common in pre-tests of questionnaires may fail to uncover the common problem. A total of 30 respondents participated in the pre-test sample size. In this study, the pre-testing was conducted at the bulk terminal at the northern port of Penang, which is ten percent (10%) of the overall population (309 respondents).

### Validity and Reliability of Instruments

This study used a standardized questionnaire with amendments, and some questions were not related to this study. Due to standard procedure, these two questionnaires were evaluated concurrently but as separate documents to assure the validity of each questionnaire section. Internal consistency or reliability indicates the strength of items holding together when measuring specific instruments. To achieve a good reliability value, Cronbach's Alpha should be greater than 0.7. The socio-demographic instrument achieved a Cronbach's Alpha of 0.719, and JCQ has given a Cronbach's Alpha result of 0.792.

### Data Collection

Information gathering is an essential process to gain an understanding of the particulars of the organization and the management of the port terminal. Industry engagement was conducted through a brief preliminary site visit. Relevant documentation was simultaneously applied for support. The sources of data consisted of an interview conducted with workers, observation, and questionnaires. The leader of the group of respondents was required to confirm the appointment time. Questionnaires were distributed to the respondents after information about the study had been provided. Each session has their own envelope to avoid leaking respondent data. The study population has three shifts a day, with 8 hours per shift. The collected data were analyzed to determine the prevalence and risk factors of occupational stress at the port terminal. This study conducted a comprehensive literature review on occupational stress in order to identify commonly studied risk factors. The Job Demand-Control-Support model and the Effort-Reward Imbalance model are well-established theoretical frameworks in the field of occupational stress. These frameworks guided our selection of risk factors that are theoretically associated

with occupational stress. This study consulted with experts in occupational health and psychology to ensure that the selection of risk factors was comprehensive and consistent with current thinking in the field. This study examining these particular risk factors will substantially contribute to our understanding of the complexity of occupational stress and its potential effects on workers and organizations. The risk factors of occupational stress are social support, tasks, recognition, exposures, stability, skilled work, organizational cultures, and responses from customers.

### Data Analysis

The data were organized and analyzed through the Statistical Package for the Social Sciences (SPSS) software for Windows to determine the occupational stress level and the other risk factor variables. SPSS is compatible with the analysis of social science data based on questionnaires. Upon completion of the data entry, the data were checked and cleaned to ensure only usable and quality data were used for further analysis. After that, any missing data, typing and coding errors were identified, and the outliers of the data were developed through descriptive statistics. All information regarding socio-demographic characteristics and JCQ was extracted and analyzed. A chi-square analysis was used to determine the relationship between occupational stress level and socio-demographic characteristics and risk factors.

### Ethical Approval

This study was approved by the Research Ethics Committee, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, No. JKEUPM-2018-100. Informed consent was also obtained from each respondent during data collection.

## RESULTS

The questionnaire was distributed, properly completed, and returned. This excellent response rate was achieved due to the good collaboration between the organization and workers. Table I shows the distribution of socio-demographic characteristics among the respondents. The largest ethnicity was Malay (94.4%), and most are married respondents. Less than half were in the age range of 35 to 44 years old.

The classification of occupational stress in this study is based on Karasek's (1979) well-established Job Demand-Control Model. This classification is based on the observed median values of psychological job demand and decision latitude, which were 44 and 77, respectively (Table II). Based on these thresholds, each organizational factor in this study was classified as 'low' (below the median value) or 'high' (above the median value). Notably, the analysis shows a significant prevalence rate of high strain among port workers, reaching 68.8% (Table III).

**Table I: Socio-demographic of respondents**

Variables	Category	n (%)
<b>Age</b>	15-24	15 (4.9)
	25-34	95 (31.3)
	35-44	101 (33.2)
	45-54	83 (27.3)
	55-64	10 (3.3)
<b>Monthly Income (RM)</b>	1050 - 2000	44 (14.15)
	2001 - 3000	113 (37.2)
	3001 - 4000	135 (44.4)
	More than 4000	12 (3.9)
<b>Duration of employment</b>	Below 5 years	81 (26.6)
	5-10 years	132 (43.4)
	11-15 years	37 (12.2)
	16-20 years	40 (13.2)
	Above 20 years	14 (4.6)
<b>Ethnicity</b>	Malay	287 (94.4)
	Chinese	4 (1.3)
	Indian	11 (3.6)
	Others	2 (0.7)
<b>Marital Status</b>	Single	65 (21.4)
	Married	229 (75.3)
	Divorced	10 (3.3)
<b>Education Level</b>	Lower Secondary	90 (29.6)
	Upper Secondary	166 (54.6)
	Pre-Universiti	35 (11.5)
	Tertiary	13 (4.3)

**Table II : Organizational factor of respondents**

Organisational Factors	Frequency (%)
<b>Decision Latitude</b>	
● Low Decision Latitude	224 (73.7%)
● High Decision Latitude	80 (26.3%)
<b>Psychological Job Demands</b>	
● Low Psychological Job Demand	46 (15.1%)
● High Psychological Job Demand	258 (84.9%)

According to Table IV, there was a significant relationship between age and occupational stress ( $p < 0.05$ ). There was a significant association between social support, task, exposure, skilled work, and organizational culture with occupational stress ( $p < 0.05$ ) (Table V).

**Table III : Percentage of high strain and non-high strain**

Category	Frequency (n)	Percentage (%)
High strain	209	68.8
Low strain	30	9.9
Active job	50	16.4
Passive job	15	4.9

**Table IV: Relationship Occupational Stress Level (OSL) and Sociodemographic factor**

Variables	Occupational Stress (%)		$\chi^2$	p-value
	Low	High		
<b>Age</b>				
15-24	0.7	4.3	4.786	0.038
25-34	11.8	19.4		
35-44	9.2	24.0		
45-44	8.6	18.8		
55-64	1.0	2.3		
<b>Ethnicity</b>				
Malay	28.9	65.5	6.053	0.745
Chinese	1.0	0.3		
Indian	1.3	2.3		
Others	0.0	0.7		
<b>Education Background</b>				
Primary	2.1	6.2	2.329	0.507
Lower Secondary	8.5	12.9		
Upper Secondary	17.1	37.5		
Pre-University	2.6	8.9		
Tertiary	1.0	3.3		
<b>Marital Status</b>				
Single	6.9	14.5	4.481	0.977
Married	23.4	52.0		
Divorced	1.0	2.3		
<b>Duration of Employment</b>				
Below 5 years	7.9	18.8	4.189	0.381
5-10 years	14.1	29.3		
11-15 years	4.6	7.6		
16-20 years	2.6	10.5		
Above 20 years	2.0	2.6		
<b>Monthly Income</b>				
1050 - 2000	2.3	17.7	5.643	0.130
2001 - 3000	12.5	24.7		
3001 - 4000	15.1	29.3		
More than 4000	1.3	2.6		

**DISCUSSION**

In the conceptual framework of the study, ‘rise in “high strain” was defined as a combination of high psychological job demand and low decision latitude, whereas “low strain” was defined as a combination of low psychological job demand and high decision latitude.

**Table V: Risk factors of occupational stress**

Variables	Occupational Stress (%)		$\chi^2$	p-value
	Low	High		
<b>Social support</b>				
Low	18.8	39.8	99.3	*0.01
High	12.5	28.9		
<b>Task</b>				
Low	19.1	25.7	21.5	*0.01
High	12.2	43.1		
<b>Recognition</b>				
Low	11.9	26.7	33.5	0.44
High	19.4	42.1		
<b>Exposure</b>				
Low	16.8	32.6	68.2	*0.02
High	14.5	36.2		
<b>Skilled work</b>				
Low	16.8	43.4	62.9	*0.04
High	14.5	25.3		
<b>Stability</b>				
Low	6.6	11.8	21.9	0.85
High	24.7	56.9		
<b>Organisational culture</b>				
Low	24.7	57.9	14.2	*0.01
High	6.6	10.9		
<b>Response from customers</b>				
Low	13.2	27.0	63.46	0.26
High	18.1	41.8		

Consequently, job strain can be classified as either "high strain" or "non-high strain." Non-high strain was further classified into three subgroups (low strain, active job and passive job). The model predicts that job strain will result from the interaction between high job demands and low job control (21, 22). This model identifies psychological job demands and decision latitude as the two most significant predictors of occupational stress. It has been shown that demographic variables, which refer to sociodemographic characteristics such as age and employment status, are associated with job stress or healthy relationships among employees (23). According to a previous study (7), there was a significant relationship between age and occupational stress ( $p=0.044$ ). According to a different study (15, 19), life experience and professional development can explain the relationship between these two variables.

According to a previous study, there was a significant association between age and occupational stress ( $p=0.044$ ). In another study, it was found that the relationship between these two variables could be

explained through life experience and professional growth. Several studies have identified and reported that gender, industry type, and working status are predictors of occupational stress (20). Contrary to previous studies, socio-demographic factors such as gender, level of education, income, job title, and length of service are significantly associated with occupational stress but age ( $p=0.229$ ), marital status ( $p=0.174$ ), and number of children ( $p=0.487$ ) are not significantly associated with occupational stress (17). This study is mainly for lecturers at the university. This finding was supported by the p-value, which did not show that marital status, education, and working experience had a significant difference from occupational stress (24).

Social support was identified as the key variable that moderated the relationship between it and occupational stress (24,25). Occupational stress reduces the performance and productivity of employees. One of the most important risk factors originates from organizational factors, which are psychological job demands, decision latitude, social support, and job insecurity (26). The other risk factors such as task, recognition, exposure, skill, stability, organizational culture, and the customer's response, were created from a previous study and are directly and indirectly triggered and influence occupational stress (27).

The physical surroundings of the workplace, which might include a high level of noise, high or low lighting, fumes, heat, a poor ventilation system, and odors, could affect moods and lead to stress. Furthermore, an office, especially a site office, that has a poor physical design could be classified as having poor working condition as it may hinder communication in the workplace. As a result, poor working relationships would occur, which might lead to stress (25).

Occupational stress was a result of various interactions occurring between employees and the workplace environment where their duties were fulfilled. It was found that location, environment, and other factors resulted in the build-up of occupational stress. There was a wide range of crucial job factors that led to potential stress and were linked to poor mental health. These included poor working conditions, shift work, long hours, risk and danger, new technology, work overload, and the qualitative and quantitative nature of the working environment (28, 29). A significant relationship ( $p<0.001$ ) was present between risk factors, such as demand, control, responsibilities, and changes.

A previous study presented the theory that occupational stress forms through organizational structure, such as role ambiguity, role conflict, and work pressure. Employees that are exposed to workplace stressors, including work in noisy and hot environment, poor psychosocial conditions, and awkward postures (29, 30). Some conditions may exert a negative influence on

employees' health and safety. In this study, the majority of the port employees are permanent and have been approved by statistical analysis as having a stability risk factor that is not significant enough to influence occupational stress.

## CONCLUSION

The rate of workplace stress prevalence amounted to 68.8%, indicating the presence of high strain. Meanwhile, the non-high strain was separated into three categories, namely low strain, active job, and passive job, with the rates of each amounted to 9.9%, 16.4%, and 4.9%, respectively. It was found that the age factor was the only factor that was significantly related to occupational stress. Five risk factors were found to be significantly related to occupational stress, such as social support, task, exposure, skilled work, and organizational culture. However, significant results were not obtained from the other three risk factors. The findings of this study can be used as a baseline for larger and more in-depth studies on job strain among crane operators working in port container terminals. The report and findings of this investigation were delivered to management. Based on the findings, it was determined that there is an urgent need for crane operators' respective management to acknowledge the existence of job strain and its contributing elements, and comprehensive stress management programs were advised to reduce job strain among these workers.

## ACKNOWLEDGEMENT

We appreciate the participation of the Department of Environmental and Occupational Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, the management department of the participating port, and all port workers in this study.

## REFERENCES

1. Lastovkova A, Carder M, Rasmussen HM, Sjoberg L, Groene GJ, Sauni R, Vevoda J, Vevodova S, Lasfargues G, Svartengren M, Varga M, Colosio C, Pelclova D. Burnout syndrome as an occupational disease in the European Union: an exploratory study. *Ind Health*. 2018;56(2):160-165. doi: 10.2486/indhealth.2017-0132.
2. Spielberger CD, Reheiser EC. Measuring occupational stress: The job stress survey. In *Occupational stress 2020* Oct 28 (pp. 51-69). CRC Press..
3. Metzler YA, von Groeling-Müller G, Bellingrath S. Better safe than sorry: Methods for risk assessment of psychosocial hazards. *Safety science*. 2019;114:122-39. doi: 10.1016/j.ssci.2019.01.003
4. Rezaeian N, Tang L, Hardie M. Psychosocial hazards and risks in the construction industry in new south wales, australia. 2021. doi: 10.31705/WCS.2021.42
5. Lazarus RS. Psychological stress in the workplace. In *Occupational stress 2020* Oct 28 (pp. 3-14). CRC Press.
6. Cox T, Kuk G, Leiter MP. Burnout, health, work stress, and organizational healthiness. In *Professional burnout 2017* Jun 26 (pp. 177-193). Routledge.
7. Magnusson Hanson LL, Westerlund H, Chungkham HS, Vahtera J, Rod NH, Alexanderson K, Goldberg M, Kivimäki M, Stenholm S, Platts LG, Zins M, Head J. Job strain and loss of healthy life years between ages 50 and 75 by sex and occupational position: analyses of 64 934 individuals from four prospective cohort studies. *Occup Environ Med*. 2018;75(7):486-493. doi: 10.1136/oemed-2017-104644. .
8. Madsen IEH, Nyberg ST, Magnusson Hanson LL, et al. Job strain as a risk factor for clinical depression: systematic review and meta-analysis with additional individual participant data. *Psychol Med*. 2017;47(8):1342-1356. doi:10.1017/S003329171600355X
9. Rahmatdin MN, Rahman NS, Othman MK. An empirical study on the current feeder shipping network patterns among Malaysian feeder service providers. *The Asian Journal of Shipping and Logistics*. 2017;33(4):177-88. doi: 10.1016/j.ajsl.2017.12.001
10. Hamka MA. Safety risks assessment on container terminal using hazard identification and risk assessment and fault tree analysis methods. *Procedia engineering*. 2017;194:307-14. doi: 10.1016/j.proeng.2017.08.150.
11. de la Peca Zarzuelo I, Soeane MJ, Bermúdez BL. Industry 4.0 in the port and maritime industry: A literature review. *Journal of Industrial Information Integration*. 2020;20:100173. doi: 10.1016/j.jii.2020.100173
12. United Nations Conference on Trade and Development. UNCTAD. Shanghai tops ranking of world's best-connected ports. 2022. <https://unctad.org/news/shanghai-tops-ranking-worlds-best-connected-ports>.
13. Jayasingam S, Omar S, Mustamil NM, Hashim RC, Bakar RA. Supporting and Sustaining Well-Being in the Workplace: Insights from a Developing Economy. Emerald Publishing Limited; 2020
14. Mohamed AF, Isahak M, Awg Isa MZ, Nordin R. The effectiveness of workplace health promotion program in reducing work-related depression, anxiety and stress among manufacturing workers in Malaysia: mixed-model intervention. *Int Arch Occup Environ Health*. 2022;95(5):1113-1127. doi:10.1007/s00420-022-01836-w.
15. Edimansyah BA, Rusli BN, Naing L, Mazalisah M. Reliability and construct validity of the Malay version of the Job Content Questionnaire (JCQ). *Southeast Asian J Trop Med Public Health*.

- 2006;37(2):412-416.
16. Alias AN, Yaakub N, Baharuddin MR, Noor MA. Determinants Of Occupational Stress In Container Port Industry—An Application Of Structural Equation Modelling Approach. *Journal of Positive School Psychology*. 2022;6(7):5434-46.
  17. Karasek Jr RA. Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative science quarterly*. 1979;24(2):285-308. doi: 10.2307/2392498
  18. Karasek R. Job content questionnaire. Los Angeles: University of Southern California. 1985
  19. Azizah A, Rozaine K, Nada I, Norhafizah Z. The prevalence of occupational stress and its association with socio-demographic factors among lecturers in a private university in Malaysia. *International Journal of Public Health and Clinical Sciences*. 2016;3(4):63-70.
  20. Sekaran U, Bougie R. *Research Methods for Business: A Skill Building Approach* (5th edition). New Jersey: John Wiley and Sons. 2010
  21. Weine SM, Langenecker S, Arenliu A. Global mental health and the National Institute of Mental Health Research Domain Criteria. *Int J Soc Psychiatry*. 2018;64(5):436-442. doi:10.1177/0020764018778704
  22. Theorell T. The demand control support work stress model. *Handbook of Socioeconomic Determinants of Occupational Health: From Macro-level to Micro-level Evidence*. 2020:339-53.
  23. Luo Z, Bai X, Min R, Tang C, Fang P. Factors influencing the work passion of Chinese community health service workers: an investigation in five provinces. *BMC Fam Pract*. 2014;15:77. doi:10.1186/1471-2296-15-77.
  24. Yakub NW, Sidik SM. Prevalence and contributing factors of job strain among crane operators in a port container terminal in Malaysia. *Malays. J. Med. Health Sci*. 2014;10(2):8.
  25. Yasin NH, Rahim MA, Hasbollah HR, Razak RC, Rashid AF, Nor MA, Jamaludin MR. Job Demands, Job Resources and Job Stress among Staff in Malaysia Nursing Home. *Indian Journal of Public Health Research & Development*. 2019;10(11):2298. doi: 10.5958/0976-5506.2019.03947.0.
  26. Wang H. The impact of social support on work stress and job burnout. School of Business, Emporia State University (USA). 2015;1-30
  27. Abdul Rahman H, Abdul-Mumin K, Naing L. Psychosocial factors, musculoskeletal disorders and work-related fatigue amongst nurses in Brunei: structural equation model approach. *Int Emerg Nurs*. 2017;34:17-22. doi:10.1016/j.ienj.2017.04.001.
  28. Yıldırım N, Karaca A, Cangur S, Acıkgöz F, Akkus D. The relationship between educational stress, stress coping, self-esteem, social support, and health status among nursing students in Turkey: A structural equation modeling approach. *Nurse Educ Today*. 2017;48:33-39. doi:10.1016/j.nedt.2016.09.014
  29. Azma K, Hosseini A, Safarian MH, Abedi M. Evaluation of the Relationship Between Musculoskeletal Discomforts and Occupational Stressors Among Nurses. *N Am J Med Sci*. 2015;7(7):322-327. doi:10.4103/1947-2714.161250.
  30. Ataro Z, Geremew A, Urgessa F. Occupational health risk of working in garages: comparative study on blood pressure and hematological parameters between garage workers and Haramaya University community, Harar, eastern Ethiopia. *Risk Manag Healthc Policy*. 2018;11:35-44. doi:10.2147/RMHP.S154611