Original Article

Prevalence of Stress, Quality of Life and Associated Factors in Office Worker in Bangkok Metropolitan

Wonglertwisawakorn Ch, MD[1]

[1] Department of Psychiatry, Faculty of Medicine Vajira Hospital, Navamindradhiraj University, Bangkok, Thailand

Objective: To determine the prevalence and associated factors of stress and quality of life in office workers in Bangkok Metropolitan Administration.

Materials and Methods: This is a questionnaire based descriptive study. Questionnaires consisted of 4 parts: personal information, Suanprung stress test, WHOQOL-BREF-THAI (26 items) and Thai-job content questionnaire. The prevalence and association were calculated by Chi-square test.

Results: A total of 495 participants were included. Of these, 43.8% experienced abnormal stress and 62.2% had poor quality of life. From multivariate analysis, significant risk factors of abnormal stress included alcoholic consumption, sitting work >7 hours per day, computer work sitting >5 hours per day, poor quality of life, high physical job demand and hazard at work. The risk factors of poor quality of life were bachelor's degree, single, absence of exercise, abnormal stress and high physical job demand. One protective factor for poor quality of life was high job control.

Conclusion: About half of office workers in Bangkok Metropolitan Administration had abnormal stress and poor quality of life. The present results could serve as a guideline to establish solution for alleviating stress and improving quality of life for these group of people.

Keywords: Stress, Quality of life, Job stress, Office worker, Bangkok Metropolitan Administration

Since everyone has to work hard for a living, they cannot avoid facing pressure that causes mental health problems, such as stress, anxiety, or depression leading to poor quality of life. This circumstance occurs particularly in the urban society where people compete for a better life. Therefore, the ability to solve one's mental health problems, especially stress and poor quality of life, is important.

The department of Mental Health defined "stress" as emotional or feeling of worry, frustration, oppression, pressure, confusing, anger, or sadness[1]. A number of studies reported factors that affected stress among workers. These included gender, marital status, type of work, level of education, work experience[2,3].

In contrast to stress, several studies showed that quality of life did not depend on an individual, but on necessity criteria, demand and passion of people in any locale and society[4-6]. From the psychological viewpoint, quality of life was defined as both physically and societal, safety, right, and freedom[7]. A study conducted on Japanese government officers found that good physical health, having a life plan, having passion about one's job and experiencing different working environments were associated with a better quality of life[8]. In Thailand, Kittisuksathit et al reported that working life quality and happiness of government officers were influenced by demographic and working characteristics, as well as good relationship with co-workers[9].

According to the literature review, factors that affected emotion and quality of life stress from working divined from an imbalance between job demand, job control or decision latitude and social support. The inequity of work requirement and social authority as well as working position, working risk, relation between co-worker and employer and working environment were factors that increased working stress[10-13].

Officers who had worked at the Bangkok Metropolitan Administration also dealt with a lot of challenge because of hard work and a lot of responsibility that caused working stress and poor quality of life. However, research on stress of this population has been scarce. This research aimed to examine prevalence of stress, quality of life and associated factors in office workers in the Bangkok Metropolitan Administration. Its results would help solve mental health problems of people who live in urban areas.

Materials and Methods
Study population
This was a questionnaire-based descriptive study

Correspondence to:

Wonglertwisawakorn Ch.

Department of Psychiatry, Faculty of Medicine Vajira Hospital, Navamindradhiraj University, Bangkok 10300, Thailand.

Phone: +66-87-9787679

E-mail: chayut@nmu.ac.th

of officers who worked in the Bangkok Metropolitan Administration. A questionnaire consisted of question regarding personal information, general health, and other research related questionnaire data. The participants included 1,800 people aged at or beyond 18 years: 531 were male and 1320 were female. The selection criteria were being willing to participate the study and able to read and write in Thai. The exclusion criteria included incomplete information for data processing.

Data collection and outcome measures
Independent variables obtained were sex, age, body mass index, education, family income, marital status, medical problems, exercise, smoking, alcohol consumption, coffee consumption, work period, sitting working time per a day, computer sitting time per a day, and working stress. Dependent variables taken include stress level and quality of life. The research method involved questionnaire paper about general information as developed by the researcher, which consisted of 4 parts.

First, general information, health data, and working information of the population.

Second, the Suanprung Stress test SPST20 was 20 questions which were concurrent validity more than 0.27 with statistic significant and relied on EMG or electromyography at confidence interval 95 percent. Cronbach's alpha reliability coefficient was more than 0.7 and related with EMG or electromyography with statistic significance. The result has defined the layer of stress level as the followings[14].

1) Mild Stress means the primary stage of stress from which one can get well in the short term, this stress can happen in daily life and has slight effect.

2) Moderate Stress means the stress in daily life from any stimulating or any appearance, people will react with enthusiasm.

3) High Stress means the stress level that people cannot adapt to in a short time that will be dangerous and lead to poor mental health.

4) Severe Stress mean the high stress level with continually to became boring, exhausted, frustrated and other symptoms.

The stress level in this research was divided into two levels: mild and moderate stress levels and were labeled as normally stress and high and severe stress level and assigned as abnormal.

Third, WHOQOL-BREF-THAI which are 2 kinds of questions: perceived objective and self-report subjective consisting of 4 factors including physical domain, psychological domain, social relationships, and environment. Meanwhile the Cronbach's alpha coefficient was 0.8406, the accuracy was 0.6515 that compared with WHOQOL for 100 papers in Thai which was officially guaranteed by the WHO. The analysis results had scores between 26 to 130. Scores from the sampling would compare with this ratio[15].

Scores 26 to 60 represented poor quality of life.

Scores 61 to 95 represented moderate quality of life.

Scores 96 to 130 represented good quality of life.

In the present study, poor and middle quality of life were defined as bad quality of life (poor quality of life) and good quality of life was labeled as better quality of life (good quality of life).

Lastly, the stress measure method from Thai-Job Content Questionnaire 54 items consisting of 6 factors which included Job control, Psychological job demand, Physical job demand, Job security, Social support, and Hazard at work that applied from the control demand model of Karasek. There are 46 items with additional 8 more items which confirmed factor analysis found that all of 6 factors are in middle level. The Cronbach's alpha reliability coefficient in each factors are 0.82, 0.76, 0.71, 0.55, 0.81 and 0.86 by random order[16].

The value from each factor was divided into 2 groups (low vs. high) by using the median as a cutoff value to consider which factor would be related to stress and quality of life.

The present study was approved by the medical ethics review board of the Faculty of Medicine Vajira Hospital, Navamindradhiraj University No. 121/2017. Informed consent was obtained from each participants.

Statistical analysis
Continuous data are presented as mean and standard deviation, or median and quartile range, as appropriate. Qualitative data are presented as frequency and percentage. The relationship between individual factors with the stress and quality of life was calculated by Chi-square test or Fisher exact test. Statistic significant was a p-value <0.05 by SPSS version 22.0.

Results
Of the 805 officers who met the inclusion criteria, 655 completely answered ST-20 paper test, 668 completely answered WHOQOL-BREF-THAI paper, whereas 495 participants answered all 3 paper tests. Hence, 495 officers (61.5%) were included for analysis (Figure 1). Table 1 presents
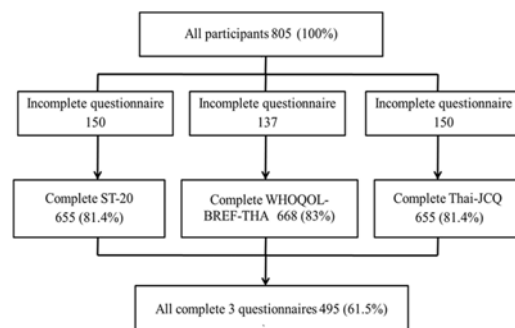

Figure 1. Number of the sampling who answer all of papers and completely questionnaire paper that classified with a kind of each paper.

Table 1. General, health and working information and job stress data

Associated factors	n (%), median or mean ± SD
Sex	
Male	161 (32.5)
Female	334 (67.5)
Age	40.20±9.08
Body mass index (BMI)	24.45±5.59
Highest education degree	
Primary, secondary	45 (9.1)
or equivalent	
Bachelor's degree	317 (64.0)
Master's or doctoral degree	133 (26.9)
Family income (baht per month)	40,000 (28,750 to 60,000)
Marital status	
Single	272 (54.9)
Married	194 (39.2)
Widow,divorce or separated	29 (5.9)
Medical problem	
No	343 (69.3)
Yes	152 (30.7)
Excercise	
No	211 (42.6)
Yes	284 (57.4)
Smoking	
Non smoker	436 (88.1)
Past smoker	32 (6.5)
Active smoker	27 (5.5)
Alcohol consumption	
Never	296 (59.8)
Occasionally	193 (39.0)
Frequent	6 (1.2)
Coffee consumption	
Never	173 (34.9)
Occasionally	148 (29.9)
Frequent	174 (35.2)
Work-related factors	
Work period (years)	10.01±8.36
Sitting working time per a day (hours)	6: 52±1: 33
Computer sitting time per a day (hours)	5: 06±2: 43
Job stress	
Job control	35.57±4.97
Low level	235 (47.5)
High level	260 (52.5)
Psychological job demand	32.01±4.86
Low level	233 (47.1)
High level	262 (52.9)
Physical job demand	12.83±3.12
Low level	228 (46.1)
High level	267 (53.9)
Job security	16.65±1.51
Low level	168 (33.9)
High level	327 (66.1)
Social support	36.82±5.96
Low level	139 (28.1)
High level	356 (71.9)
Hazard at work	16.96±4.12
Low level	217 (43.8)
High level	278 (56.2)
Total job stress	150.84±13.42
Low level	247 (49.9)
High level	248 (50.1)

data on general information, health information, working information and job stress of these participants.

The prevalence of stress with normal level was 56.2%, whereas, abnormal stress level was found in 43.8% of participants. Regarding quality of life, 37.8% had good quality of life and as high as 62.2% had poor quality of life (Tables 2 and 3).

In univariate analysis (Table 4), factors that were significantly related to abnormal stress level included alcohol consumption, spend more than 7 hours per a day sitting work, spend more than 5 hours per day computer work sitting, poor quality of life, physical job demand in high level and hazard at work in high level. After adjustment for confounding factors by multivariate analysis, these factors remained significance. The odds ratios were 1.61, 1.89, 1.66, 5.04, 1.77 and 1.76, respectively.

The relationship between factors and quality of life evaluated by multivariate analysis demonstrated that 5 factors were significantly related to poor quality of life. These included bachelor's degree, single, absence of exercise, abnormal stress, and highly physical job demand, with odds ratio of 2.82, 1.59, 1.7, 5.08 are 1.59, respectively. On the contrary, one factor that was a protective factor for poor

Table 2. The level of prevalence of stress

Level of stress	n (%)
Mild stress	47 (9.5)
Moderate stress	231 (46.7)
High stress	179 (36.2)
Severe stress	38 (7.7)

Table 3. Prevalance of quality of life in each factors and in the overall

Quality of life	
Physical domain	25.61±3.47
Poor quality of life	2 (0.4)
Moderate quality of life	292 (59.0)
Good quality	201 (40.6)
Psychological domain	22.00±3.48
Poor quality of life	10 (2.0)
Moderate quality of life	256 (51.7)
Good quality	229 (46.3)
Social relationships	10.75±1.96
Poor quality of life	25 (5.1)
Moderate quality of life	281 (56.8)
Good quality	189 (38.2)
Environment	26.60±4.70
Poor quality of life	13 (2.6)
Moderate quality of life	358 (72.3)
Good quality	124 (25.1)
Overall quality of life	91.61±12.54
Poor quality of life	2 (0.4)
Moderate quality of life	306 (61.8)
Good quality	187 (37.8)

quality of life was high job control, which yielded an odds ratio of 0.38 (Table 5).

Discussion

The results of the present study showed that the prevalence of abnormal stress among officers who had worked at the Bangkok Metropolitan Administration was 43.8%. The other report by Phoolawan et al who conducted a study on Thai officers working in rural area, found that the prevalence of stress among teachers in Sakon Nakhon province was 39.5%[17], which was slightly lower than the rate found in this study. In the present study, the factors related to stress were alcohol consumption, sitting work for more than 7 hours a day, computer work sitting for more than 5 hours per day, poor quality of life, high physical job demand, and high hazard at work. These were consistent with the results from the study of Ogasawara et al who found that out time working and alcohol drinking frequency were associated with significant depression[18]. Such a finding implied that abnormal stress was a symptom of depression. In line with the results of the present study, another study by Wankanon also found that working time period could affect workers' stress[3].

The results of the present study showed that poor quality of life was highest related to the stress (odds ratio 5.04). This might be because quality of life reflected a man's behavior. Moreover, working for a long time or in front of the computer for more than 5 hours a day, which signified hard working and less relaxed, was also observed as a factor influencing more stress. The finding of an association between high physical job demand factor and stress in the present study was in agreement with the present study of Karasek which reported that workers with high physical job demand but low authority experienced stress from work[11].

The prevalence of poor quality of life among officers in this study was 62.2%. A previous study by Ahmed et al who studied the impact of computer users' ergonomics on quality of life found that individuals who did not work with ergonomics had poor quality of life[19]. Five risk factors associated with poor quality of life observed in the present study were graduated in bachelor degree, single status, do not exercise, abnormal stress, and highly physical job demand. These results were consistent with the findings of Kittisuksathit et al who found that marital status, education, work position, and good working environment had an impact on quality of life[9]. The explanation for this finding might be because individuals who graduated in bachelor degree had a wider range of working than those who graduated in lower and higher education. Physical job demand was similar to working stress and the exercise factor had a lot of research oversea on exercise and quality of life such as the research of Bang et al. who studied on the results of waking exercise with physical health, depression and quality of life in office staff in Korea and found that waking was good for quality of life[20]. Exercise is therefore good for quality of life because it increases many kinds of happiness neurotransmitters, healthy and can be interact with other to be good quality of life.

Table 4. The relation between factors on the stress both with normal and abnormal

Factors	Stress		p-value	Multivariable analysis		
	High & Severe, n (%)	Mild & Moderate n (%)		Or_adj	95% CI	p-value
Sex						
Male	66 (41.0)	95 (59.0)	0.376			
Female	151 (45.2)	183 (54.8)				
Age (years)						
<40	113 (46.7)	129 (53.3)	0.386			
40 to 49	70 (42.4)	95 (57.6)				
≥50	34 (38.6)	54 (61.4)				
Body mass index (BMI)						
Normal	107 (42.6)	144 (57.4)	0.853			
Overweight	32 (45.7)	38 (54.3)				
Obesity	78 (44.8)	96 (55.2)				
Highest education degree						
Primary, secondary or equivalent	17 (37.8)	28 (62.2)	0.680			
Bachelor's degree	140 (44.2)	177 (55.8)				
Master's or doctoral degree	60 (45.1)	73 (54.9)				
Family income (baht per month)						
<40,000	73 (40.8)	106 (59.2)	0.555			
≥40,000	98 (46.2)	114 (53.8)				
Unknown	46 (44.2)	58 (55.8)				
Marital status						
Single	129 (47.4)	143 (52.6)	0.174			
Married	78 (40.2)	116 (59.8)				
Widow, divorce or separated	10 (34.5)	19 (65.5)				
Medical problem						
No	145 (42.3)	198 (57.7)	0.292			
Yes	72 (47.4)	80 (52.6)				
Excercise						
No	89 (42.2)	122 (57.8)	0.522			
Yes	128 (45.1)	156 (54.9)				
Smoking						
Non smoker	190 (43.6)	246 (56.4)	0.751			
Past smoker or active smoker	27 (45.8)	32 (54.2)				
Alcohol consumption						
Never	117 (39.5)	179 (60.5)	0.018			
Occasionally or frequent	100 (50.3)	99 (49.7)		1.61	(1.06 to 2.45)	0.025
Coffee consumption						
Never	72 (41.6)	101 (58.4)	0.466			
Occasionally or frequent	145 (45.0)	177 (55.0)				
Work period (years)						
<10	97 (45.1)	118 (54.9)	0.616			
≥10	120 (42.9)	160 (57.1)				
Sitting working time per a day (hours)						
<7	82 (37.1)	139 (62.9)	0.007			
≥7	135 (49.3)	139 (50.7)		1.89	(1.23 to 2.90)	0.004
Computer sitting time per a day (hours)						
<5	87 (37.0)	148 (63.0)	0.004			
≥5	130 (50.0)	130 (50.0)		1.66	(1.09 to 2.51)	0.018
Quality of life						
Poor	179 (58.1)	129 (41.9)	<0.001			
Good	38 (20.3)	149 (79.7)		5.04	(3.17 to 8.03)	<0.001
Job stress						
Job control						
Low level	117 (49.8)	118 (50.2)	0.011			
High level	100 (38.5)	160 (61.5)				

Table 4. Cont.

Factors	Stress		p-value	Multivariable analysis		
	Height & Severe, n (%)	Mild & Moderate n (%)		Or$_{adj}$	95% CI	p-value
Psychological job demand						
Low level	86 (36.9)	147 (63.1)	0.003			
High level	131 (50.0)	131 (50.0)				
Physical job demand						
Low level	74 (32.5)	154 (67.5)	<0.001			
High level	143 (53.6)	124 (46.4)		1.77	(1.15 to 2.72)	0.01
Job security						
Low level	87 (51.8)	81 (48.2)	0.011			
High level	130 (39.8)	197 (60.2)				
Social support						
Low level	78 (56.1)	61 (43.9)	0.001			
High level	139 (39.0)	217 (61.0)				
Hazard at work						
Low level	73 (33.6)	144 (66.4)	<0.001			
High level	144 (51.8)	134 (48.2)		1.76	(1.14 to 2.71)	0.011
Total job stress						
Low level	102 (41.3)	145 (58.7)	0.255			
High level	115 (46.4)	133 (53.6)				

Besides, abnormal stress level was also related to poor quality of life, with the highest odds ratio of 5.08. The present study also found that high authority to control work was a protective factor for poor quality of life. The likely explanation was because this makes them proud, thereby improving quality of life.

    The high rates of abnormal stress and poor quality of life observed among officers of the Bangkok Metropolitan Administration should serve as information for providing holistic intervention to improve their mental health and quality of life, such as mental and physical health check-up, exercise, lifestyle modification, improving working environment, self-working administration, etc.

    The strength of this research was that it was the first one to investigate mental happiness of the staff who had worked in Bangkok Metropolitan Administration. Second, the sample size was large. Third, it was conducted using standard criteria to evaluate stress and quality of life. Nevertheless, the present study was limited by having a wide range of questions and was not rechecked for validity with Suanprung stress test SPST20 and Thai Job Content Questionnaire. In addition, moderate and poor quality of life were grouped together because the number of participants with poor level value was small. Hence, the results might not be accurate. Finally, this was a descriptive analysis at a particular point of time. So, the results showed only the association, but not causative effects.

Conclusion

    More than half of the staff who had worked in Bangkok Metropolitan Administration were highly stressful

and had poor quality of life. The factors related to these findings included personal factors, health factor and working factor. The results of the present study might serve as basic information for future enhancement of quality of life or reducing working stress in this population group.

What is already known on this topic?

    Factors associated with high level of stress include level of education, work experience and marital status, whereas factors associated with poor quality of life include sex, age, marital status, education, working period, salary, bonus, benefits, working position, job description, cultural organization, good governance, working opportunity, working engagement, working improvement, working environment, and good relationship with co-workers.

What this study adds?

    The rates of abnormal stress and poor quality of life in officers of the Bangkok Metropolitan Administration were high. The current study also found several factors that were associated with both abnormal stress and poor quality of life.

Table 5. The relation between factors on good and poor quality of life

Factors	Quality of life		p-value	Multivariable analysis		
	Poor, n (%)	Good, n (%)		Or$_{adj}$	95% CI	p-value
Sex						
Male	99 (61.5)	62 (38.5)	0.816			
Female	209 (62.6)	125 (37.4)				
Age (years)						
<40	155 (64.0)	87 (36.0)	0.595			
40 to 49	102 (61.8)	63 (38.2)				
≥50	51 (58.0)	37 (42.0)				
Body mass index (BMI)						
Normal	151 (60.2)	100 (39.8)	0.602			
Overweight	44 (62.9)	26 (37.1)				
Obesity	113 (64.9)	61 (35.1)				
Highest education degree						
Primary, secondary or equivalent	34 (75.6)	11 (24.4)	0.025			
Bachelor's degree	202 (63.7)	115 (36.3)		2.82	(1.19 to 6.64)	0.018
Master's or doctoral degree	72 (54.1)	61 (45.9)				
Family income (baht per month)						
<40,000	112 (62.6)	67 (37.4)	0.812			
≥40,000	129 (60.8)	83 (39.2)				
Unknown	67 (64.4)	37 (35.6)				
Marital status						
Single	180 (66.2)	92 (33.8)	0.027	1.59	(1.02 to 2.46)	0.04
Married	107 (55.2)	87 (44.8)				
Widow, divorce or separated	21 (72.4)	8 (27.6)				
Medical problem						
No	204 (59.5)	139 (40.5)	0.058			
Yes	104 (68.4)	48 (31.6)				
Excercise						
No	146 (69.2)	65 (30.8)	0.006	1.70	(1.10 to 2.61)	0.016
Yes	162 (57.0)	122 (43.0)				
Smoking						
Non smoker	272 (62.4)	164 (37.6)	0.839			
Past smoker or active smoker	36 (61.0)	23 (39.0)				
Alcohol consumption						
Never	184 (62.2)	112 (37.8)	0.973			
Occasionally or frequent	124 (62.3)	75 (37.7)				
Coffee consumption						
Never	101 (58.4)	72 (41.6)	0.196			
Occasionally or frequent	207 (64.3)	115 (35.7)				
Work period (years)						
<10	136 (63.3)	79 (36.7)	0.678			
≥10	172 (61.4)	108 (38.6)				
Sitting working time per a day (hours)						
<7	138 (62.4)	83 (37.6)	0.927			
≥7	170 (62.0)	104 (38.0)				
Computer sitting time per a day (hours)						
>5	145 (61.7)	90 (38.3)	0.820			
≥5	163 (62.7)	97 (37.3)				
Level of stress						
Normal stress	129 (46.4)	149 (53.6)	<0.001			
Abnormal stress	179 (82.5)	38 (17.5)		5.08	(3.21 to 8.07)	<0.001
Job stress						
Job control						
Low level	178 (75.7)	57 (24.3)	<0.001			
High level	130 (50.0)	130 (50.0)		0.38	(0.25 to 0.59)	<0.001
Psychological job demand						
Low level	135 (57.9)	98 (42.1)	0.064			
High level	173 (66.0)	89 (34.0)				

Table 5. Cont.

Factors	Quality of life		p-value	Multivariable analysis		
	Poor, n (%)	Good, n (%)		Or_adj	95% CI	p-value
Physical job demand						
Low level	122 (53.5)	106 (46.5)	<0.001			
High level	186 (69.7)	81 (30.3)		1.59	(1.04 to 2.43)	0.034
Job security						
Low level	122 (72.6)	46 (27.4)	0.001			
High level	186 (56.9)	141 (43.1)				
Social support						
Low level	105 (75.5)	34 (24.5)	<0.001			
High level	203 (57.0)	153 (43.0)				
Hazard at work						
Low level	126 (58.1)	91 (41.9)	<0.001			
High level	182 (65.5)	96 (34.5)				
Total job stress						
Low level	165 (66.8)	82 (33.2)	0.036			
High level	143 (57.7)	105 (42.3)				

References

1. Department of Mental Health. Stress relief guideline. Bangkok: Siam M&B Publishing; 1998.
2. Proyrungroj N. A study of officer's stress at the bank of Ayudha Public Company Limited in Eastern Seaboard Development area [dissertation]. Chonburi: Burapha University; 1995.
3. Wangkanon T. Effects of factors at work on employee stress: a case study of Ampasindustries Company Limited [dissertation]. Pathum Thani: Rajamangala University of Technology Thanyaburi; 2013.
4. Andrews FM, Crandall R. The validity of measures of self-reported well-being. Soc Indic Res 1976;3:1-19.
5. Harwood PL. Quality of life: ascriptive and testimonial conceptualizations. Soc Indic Res 1976;3:471-96.
6. Cummins RA. The comprehensive quality of life scale (fifth edition). Proceedings of the first international conference on quality of life in Cities: Issues and perspectives; 4-6 March, 1998. Conrad International Hotel; 1998. p. 68.
7. Wikipedia the free encyclopedia. Quality of life [Internet]. 2016 [cited 2016 Mar 17]. Available from: https://en.wikipedia.org/wiki/Quality_of_life.
8. Nasermoaddeli A, Sekine M, Hamanishi S, Kagamimori S. Associations between sense of coherence and psychological work characteristics with changes in quality of life in Japanese civil servants: a 1-year follow-up study. Ind Health 2003;41:236-41.
9. Kittisuksathit S, Chamchan C, Tangchonlatip K, Holumyong C. Quality of life, work and happiness. Bangkok: Thammada Press; 2015.
10. Karasek R, Baker D, Marxer F, Ahlbom A, Theorell T. Job decision latitude, job demands, and cardiovascular disease: a prospective study of Swedish men. Am J Public Health 1981;71:694-705.
11. Karasek RA Jr. Job demands, job decision latitude, and mental strain: Implication for job redesign. Adm Sci Q 1979;24:285-307.
12. Finney C, Stergiopoulos E, Hensel J, Bonato S, Dewa CS. Organizational stressors associated with job stress and burnout in correctional officers: a systematic review. BMC Public Health 2013;13:82.
13. Nieuwenhuijsen K, Bruinvels D, Frings-Dresen M. Psychosocial work environment and stress-related disorders, a systematic review. Occup Med (Lond) 2010;60:277-86.
14. Mahatnirunkul S, Pumpaisanchai W, Tarpunya P. The construction of Suan Prung stress test for Thai population. Bull Suan Prung 1997;13:1-11.
15. Mahatnirunkul S, Tuntipivatanaskul W, Pumpisanchai W. Comparison of the WHOQOL-100 and the WHOQOL-BREF (26 items). J Ment Health Thai 1998;5:4-15.
16. Phakthongsuk P. Construct validity of the Thai version of the job content questionnaire in a large population of heterogeneous occupations. J Med Assoc Thai 2009;92:564-72.
17. Phoolawan P, Siri S, Sujirarat D, Taechabonsermsak P. Stress among teacher in Sakonnakhon primary educational service area. The 2018 National Population Conference; 20 Nov, 2018; The Twin Tower Hotel Bangkok; 2018. p. 1-9.
18. Ogasawara K, Nakamura Y, Aleksic B, Yoshida K, Ando K, Iwata N, et al. Depression associated with alcohol intake and younger age in Japanese office workers: a case-control and a cohort study. J Affect Disord 2011;128:33-40.
19. Ahmed I, Shaukat MZ. Computer users' ergonomics and quality of life - evidence from a developing country. Int J Inj Contr Saf Promot 2018;25:154-61.

20. Bang KS, Lee IS, Kim SJ, Song MK, Park SE. The effects of urban forest-walking program on health promotion behavior, physical health, depression, and quality of life: A randomized controlled trial of office-workers. J Korean Acad Nurs 2016;46:140-8.