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Original Article

A Causal Relationship of Occupational Stress among University Employees

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Abstract

Background: Occupational stress is a psychosocial dimension of occupational health concept on social determinants of health, especially, job & environmental condition. Recently, staff network of different government universities of Thailand have called higher education commission, and Ministry of Education, Thailand to resolve the issue of government education policy (e.g. wage inequity, poor welfare, law, and job & environment condition) that leads to their job insecurity, physical and mental health problems from occupational stress. The aim of this study was to investigate a causal relationship of occupational stress among the academic university employees.

Methods: This cross sectional research was conducted in 2014 among 2,000 academic university employees at Thai government universities using stratified random sampling. Independent variables were wage, family support, periods of duty, and job & environmental condition. Dependent variable was stress.

Results: Job & environmental condition, as social and environmental factor, and periods of duty as individual factor had direct effect to stress ($P< 0.05$). Family support, as family factor, and wage, as individual factor had direct effect to stress ($P < 0.05$). Both family support and wage were the causal endogenous variables.

Conclusion: Job & environmental condition and periods of duty were increased so that it associated with occupational stress among academic university employees at moderate level.

Keywords: Causal relationship, Occupational stress, University employees, Thailand

Introduction

Since 1997, there were many changes in the employer practices affecting the organization of work in both the developed and developing countries from economic crisis. Thailand being a developing country is of no exception in such economic crisis (1, 2). One of these changes has been often-repeated rounds of downsizing and restructuring by employers. Frequently related to other practices like outsourcing, contractual jobs, downsizing, restructuring job intensification, multi-tasking, and changes in management behavior at workplace have increased the level of job insecurity among employees (3- 5). Employees (e.g. nurses, lecturers, doctors, farmers etc.) had poor mental health (e.g. job stress, job insecurity, job condition, anxiety, burnout etc.) from downsizing /reorganization (6-11) and have sever health problems like stress linked to a heart attack (myocardial infarction),

cardiovascular disease, stork, and autoimmune disease. Occupational stress is associated with cardiovascular disease, although, mechanisms of controlling them are ambiguous and needs further investigation (12).

In Thailand, both government and private sectors has been affected from the global economic crisis way back since 1997 (1). The Thai government efforts to downsizing/ and reorganizing of government sector is part of the intervention program as suggested by The International Monetary Fund (IMF). The new government university policies introduced in year 2000 about employment conditions, have affected the academic staffs in Government University. Policy "A Brain of Thailand" which is the academic staffs holding a Masters or Doctoral degree are required to sign a contract to work with the government universities between 6 month to 5 years with an inclusion of those who have taken the government scholarships and have to pay back in term of service period requirement. This policy has raised a stressed among the academic staffs in the government university. This also led into difference of social and health inequality in each of the government university at workplace in Thailand (13).

Occupational stress is a psychosocial dimension of occupational health concept on social determinants of health, especially, in job and environmental conditions (14- 17). University teaching has traditionally been regarded as a low stress occupation (18). Recently, universities staff network in Thai government universities have called the Higher Education Commission and Ministry of Education to resolve this issue and get them relief from government education policy (e.g. inequity salary, poor welfare, law, job and environment conditions etc.) which is leading towards job insecurity, physical and mental health problems of the employees from occupational stress (13).

Concept of this original article chose public health in field of occupational health. It focused on occupational stress dimension based on social determinants of health to investigate a causal relationship of occupational stress among the academic university employees in Thailand and examine each variables (job & environment condition, wage, family support, and periods of duty) on stress.

The operational definitions of this research consisted of job & environmental condition, periods of duty, family support, wage, and stress. Job & environmental condition means job tasks, job hours, job environments, welfare, job securities, and workload by using a 4-point Likert-type of scale of none, coded as 1 (least), 2 (less), 3 (more), and 4 (most). It is a social and environmental factor. A period of duty is an individual factor that calculated from number of working year among participants. Family support is a social variable to measure dimension of family support (e.g. adaptation, resolve, growth, affection, and partnership) by using the family APGAR questionnaire. Wage calculated from salary (baht /month). Stress used the summarized scores of the Suanprung stress test-20, which is a standard measurement from Department of Mental Health, Ministry of Public Health, Thailand.

Hypothesis of this original article were as follows; (i) job & environmental condition, wage, family support, and periods of duty variables had direct effect to stress. (ii) Job & environmental condition had direct effect to stress the most.

The aim of this original article was to investigate a causal relationship of occupational stress among the academic university employees in Thailand.

Materials and Methods

This cross sectional research was conducted in 2014 among 2,000 academic university employees at government universities using stratified random sampling. All the participants in this research live in different provinces of Thailand. The eligibility criteria included Thai academic university employees who could communicate in the Thai language, and work as academic staffs of university employees at government universities of Thailand, both female and male academic staffs, and 20 to 60 years old. The criteria excluded Thai academic staffs of university employees at government universities of Thailand who were > 60 years old, and Thai academic staff of university employees at private universities in Thailand.

The sampling method was stratified random sampling. This stratified random sampling was divided into two strata. First strata was grouped in 49 new government universities ,and 24 original government universities of Thailand from 5 regions in Thailand by stratified random sampling. After 10 new government universities and 6 original government universities of Thailand were selected by random sampling. Second strata had 16 government universities of Thailand. Academic staffs university employees both new government universities and original government universities of Thailand were selected by random sampling from these 16 government universities of Thailand. Therefore, Thai academic staff university employees in this original article totaled 2,000 cases who had worked in 16 government universities of Thailand. They had worked in two groups (new government universities, and original government universities). Each group was 1,000 Thai academic staff university employees of government universities.

Sample size was calculated as no less than 384 cases at a 95% confidence level. For the causal analysis, 2,000 participants were used according to the rule of 5 subjects per parameter which participants of this research had enough to confirm and confidence of the results. Thus, the total sample size was 2,000 cases of this original article.

Research started when the researchers sent the quantitative questionnaire to the Ethics Committee for Human Research at Mahidol University to examine the ethics of the research before the approval. Its human ethics code was COA. No. 2013/331.2811. Validity was proofed by content and construct validity. The instruments of this original article were questionnaires about demographic general data and occupational stress among university employees at government universities. These instruments were sent to five professors in order to verify content and construct validity. After that, researchers and assistance researchers started to the next research process for data collection.

Three important domains have been discussed in this research (i.e. individual, family, social and environment) which were independent variables, and a dependent variable (stress). Individual factor was divided into general data. Family factor was divided into five dimensions (adaptation, resolve, growth, affection, and partnership) by The Family APGAR questionnaire. Social and environmental factor related to job & environmental condition.

Name of university, province, sex, and education were used to measure general data. Periods of duty, and wage variables were measured interval scale. The job & environmental variable and their questions were measured related to the dimension of job task (teaching task, research task, social service task, Thai culture task, multi-task, others), working hours (period of teaching, research, social service, Thai culture, others, and much working hours), quantitative job task for teaching, research, Thai culture, job environment (e.g. enough to equipment for your job, and job environment followed by the concept of occupational health and safety), welfare (e.g. your university had welfare equal to welfare of government officer, administer had welfare policy to practice in every dimensions, and university had welfare motivation for university employees), and job insecurity (e.g. you had job security, the evaluation for working and bonus had effect to your security, and period of contracted university employees had effect to your job insecurity). Their measurements were interval scales. These items were replied using a 4-point Likert-type of scale of none, coded as 1= least, 2= less, 3= more, 4= most and an open question is how the relationship of job & environment condition, family, wage, and others have an effect?. Family support variable measured used "The Family APGAR questionnaire" (19). The latter, was interval scales (0= hardly ever, 1= some of the times, 2= almost usually). The scores of each of the five questions are then calculated. These were divided into three levels; 7-10 scores = highly family support, 4-6 scores = moderately family support, 0-3 scores = severely family support. The scores of the Suanprung stress test were interpreted by stress level and points. A point of 0 to 5 suggests a less stress than a normal level, point of 6 to 17 suggests a stressed at a normal level, point of 18 to 25 suggests a moderate level of stress,

point of 26 to 29 suggests high level of stress, and 30 points and above suggests a severe stress (20).

The main measure of predictor variables (family support, sex, job & environmental condition, wage, and periods of duty) in the questionnaire used in this research were interval scale in path model. The construct and content reliability of every question were verified by five professors. Reliability of questionnaires was proven by test-retest reliability. The questionnaires were evaluated to be reliable at no less than 0.8 by using SPSS/PC+ for windows to find Cronbach's Alpha Coefficient. The reliability of the predictor variables, family support variable and stress were 0.82, 0.8 and 0.91 respectively.

The primary data collected from the academic university employees who were academic staffs at government universities of Thailand. Data were collected by the researchers and assistance researchers. The principal investigator explained the entire questionnaire to data collectors. If participants had difficulty understanding the questions, data collectors provided further explanations by face-to-face surveys, and using social network.

The data analysis were analyzed by minimum and maximum scores, skewness, kurtosis, mean, standard deviation, and Pearson correlations to measure predictor variables on stress among university employees by SPSS program in version 20.00. The relationships of occupational stress among university employees were verified by causal relationship using the M plus program in version 5.2 (21). The causal relationship was used to analyze r square and measure the fit of the model. The criteria of rule for test of path model using the M plus program is as follows: chi-square not equal to 0, degrees of freedom not equal to 0, p-value more than 0.05, CFI (Comparative Fit Index) more than 0.95, RMSEA (Root Mean Square Error of Approximation) less than 0.07, SRMR (Standardized Root- Mean-Square Residual) less than 0.05. This criteria of rule for test of path model was appropriated to population (more than 250 samples), and it used observe variables (less than 12 variables). Individual parameters test considered total relationship, direct relationship, and indirect relationship of independent variables on dependent variables and causal diagram.

Results

The 2,000 academic university employees completed who are the respondents have all the questions. The mean and standard deviation for the age of academic university employees is 40 ± 6.992. The minimum and maximum age is 24, and 53 years old, respectively. The mean and standard deviation for the periods of duty, and wage among academic university employees are 6.33 ± 1.843, and 20,001 to 25,000 ± 0.792. The mean for job & environmental condition, family support, and stress level of academic university employees are more, some of the times, and moderate. The minimum and maximum age, and periods of duty are 24, 53, 1, and 14 years, respectively.

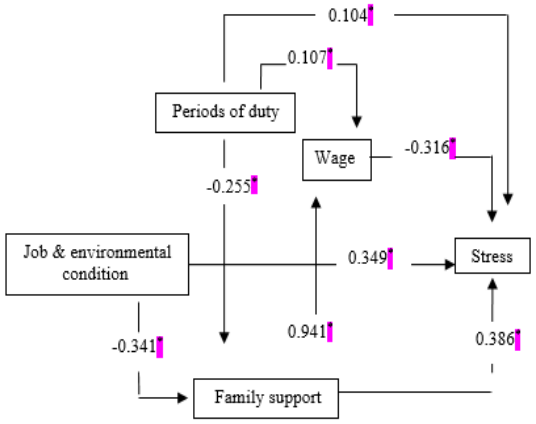

Fig.1: A Causal relationship of occupational stress among university employees (n = 2,000)
* P -value < 0.05
R-square of wage = 0.806 (P -value <0.05)
R-square of family support = 0.283 (P -value <0.05)
R-square of stress = 0.147 (P -value <0.05)

The minimum and maximum wage variables are 15,001, and 35,000 baht per month. The age variables show a negative skewness of -0.067 and a kurtosis of -0.536. The periods of duty, wage, job & environmental condition, and stress variables

represent a positive skewness of 0.193, 0.331, and 0, respectively. The family support variable displays a negative skewness of -0.112. The periods of duty, wage, job & environmental condition, family support, and stress variables showed a negative kurtosis of -0.779, -0.290. -0.999, and -0.287, respectively (Table 1). Based on goodness of fit results, which is most accurate for this sample having consideration is Chi-Square (0.405), *P*-value (0.5247), CFI (1.000), TLI (1.001), RMSEA (0.947), and SRMR (0.001). R-square of wage, family support, and stress are 0.806, 0.283, and 0.147 (P value < 0.05), respectively. Their results of a causal relationship of occupational stress among university employees are shown (Table 2 and Fig.1).

Table 1: Statistical data among university employees (n =2,000)

Variable	Mean	Minimum	Maximum	Standard Deviation	Skewness	Kurtosis
Age (yr)	40	24	53	6.992	-0.067	-0.536
Periods of duty (yr)	6.33	1	14	1.843	0.193	-0.779
Wage (baht)	20,001 to 25,000	15,001	35,000	0.792	0.331	-0.290
Job & environmental condition	More	least	Most	0.707	0	-0.999
Family support	Some of the times	hardly ever	almost usually	0.591	-0.112	-0.764
Stress level	Moderate	Low	Severity	0.791	0.331	-0.287

Table 2: Direct and indirect effect of causal relationship among university employees (n =2,000)

Endogenous/ Exogenous variable	Endogenous variable					
	Wage		Family support		Stress	
	Direct effect	Indirect effect	Direct effect	Indirect effect	Direct effect	Indirect effect
Periods of duty	0.107*		-0.255*		0.104*	
Job & environmental condition			-0.341*		0.349*	-0.022*
Wage					-0.316*	
Family support	0.941*				0.386*	
* *P* -value < 0.05						

Discussion

Following by public health and occupational health concept focused on four dimensions (e.g. physic, bio, environmental, and psychosocial dimensions). Occupational stress is one of the psychosocial dimensions in field of public health and occupational health. At present, various researches in accordance to WHO apply social determinants of health with public health and occupational health to drive the developmental perspectives for entire population (22). Results, showed causal relationship of occupational stress among academic university employees have goodness of fit indices and are most accurate for 2,000 academic university employees. It indicated that the important causal relationship due to occupational stress is job & environmental condition following by hypothesis II (Fig. 1) which is social and environment factors associated with work-related factors, and job task. Periods of duty is individual factor associated with occupational stress among academic university employees, whereas, wage, family support, and periods of duty variables had direct effect on stress following by hypothesis I. It indicated that these factors related to psychosocial

dimension in field of public health, especially, occupational health based on social determinants of health. Job & environmental condition on occupational stress is a dimension related to social determinants of health (16, 17). The latter, is logic of thinking between social and public health with health for people in this world that it is discussed by world health organization.

It is a major strength of this research that applies questions in fields of public health, especially, occupational stress based on social determinants of health. The result of this research is in consistence with the study of Chinese academic staffs in universities. The latter, is a group of high risk to create occupational stress having an increase of job tasks within university in China. Not only it increases job task, but also it increases research task (18). The high job & environmental condition among academic staff in university linked into occupational stress (11, 22) and environmental factor linked into job satisfaction among academic staff in university (23). Administrator and service employees in university found that job & environmental condition (e.g. high timetable and job performance) is exogenous factor associated with occupation stress at moderate level (18). The results of this research found that occupational stress level among academic university employees is at moderate level these stress can accept to create active at individual level but it can increase stress from occupation. This strength of this research is focused on bio-psychosocial model by causal relationship (M pulse program) which is linked into individual and psychosocial factors. In addition, it can be explained to causal relationship of occupational stress among university employees, which are new employees group at government universities in Thailand resulting from Thai government policy. The results of this research displayed direct effect more than indirect effect to stress. It indicated that independent variables to dependent variable (stress) were the good questions to explain and link into the causal relationship of occupational stress among academic university employees. The limitation and constraints of this research is shortage of budget along with delay in budget payment release.

However, this research studied only academic university employees at government universities. Respondents finished master and doctoral degree that had academic freedom with their occupations more than the other groups in university and they got limited family support have led into occupational stress at moderate level among academic university employees. There are important groups of high social status, referred as; brain of Thailand. Government should pay attention on them before the situation gets worst (i.e. brain drain among academic university employees). Researchers in future should look into the importance of psychosocial factors in relation to university employees who are new group in Thailand as well as their impact on employees from different organizations across the country. This will help the policy makers to develop such policies that addresses the emerging psychosocial hazards problems national wide. Some suggestions for the next research are that researchers should be increase an important in bio-psychosocial research in Thailand, especially, SEM analysis (Structural Equation Modeling Analysis), and qualitative analysis both university employees who are new group in Thailand, and the other employees to develop government policy in the future.

Conclusion

The causal exogenous relationship of occupational stress among 2,000 academic university employees, which had direct effect to stress, is job & environmental condition, as social and environmental factor, and periods of duty as individual factor ($P < 0.05$). The causal endogenous relationship (e.g. family support, and wage) of occupational stress had direct effect to stress. Job & environmental condition had direct effect to stress. The stress level of occupational stress among academic university employees in this research was at moderate level.

Ethical considerations

Ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsifica-

tion, double publication and/or submission, redundancy, etc.) have been completely observed by the authors. Its human ethics code was COA. No. 2013/331.2811 which accepted on November 28th, 2013 from documentary proof of the committee for research ethics (social sciences), Faculty of social science and humanities, Mahidol University, Salaya campus, Nakhon Pathom Province, Thailand.

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