Pertanika J. Soc. Sci. & Hum. 25 (1): 189 – 204 (2017)

PERTANIKA JOURNALS

SOCIAL SCIENCES & HUMANITIES

Journal homepage: http://www.pertanika.upm.edu.my/

A Cross-Sectional Study on Occupational Stress of Using Thai-JCQ among Thai Immigrant Employees in Bangkok: A Path Diagram

Chonticha Kaewanuchit

Department of Applied Sciences, Faculty of Science and Technology,
Phranakhon Si Ayutthaya Rajabhat University, Phranakhon Si Ayutthaya province, 13000 Thailand

ABSTRACT

The author sought to verify occupational stress among Thai immigrant employees aged 20 years or older in Bangkok, Thailand and to determine the variables (e.g. working conditions, workloads, job securities and wages) associated with occupational stress among Thai immigrant employees in Bangkok. Five hundred Thai immigrant employees in Thailand's capital, Bangkok, were interviewed. Occupational stress was assessed using the Thai Job Content Questionnaire (Thai-JCQ), Thai version, which was applied using the Job Demand Control (JDC) model by Karasek. Data analysis was undertaken using a path diagram. The results showed that the variables could explain the occupational stress change by 26.6%. Working conditions, workload and job security have a direct effect on occupational stress with standardised regression weights of 0.309, 0.204 and 0.172 (p-value<0.01), respectively. Moreover, workload has indirect relationship on occupational stress with standardised regression weights of 0.062 (p-value<0.01). In contradiction, wages did not have any significance. In conclusion, working conditions have the most direct relationship on occupational stress. A suggestion should be that a study, using qualitative methods, is undertaken to further understand its links to the creation of health policy.

Keywords: Path diagram, occupational stress, Thai job content questionnaire, Thai immigrant employees, Bangkok

ARTICLE INFO

Article history:
Received: 23 January 2016
Accepted: 15 July 2016

E-mail address:
sim356@yahoo.com (Chonticha Kaewanuchit)

ISSN: 0128-7702 © Universiti Putra Malaysia Press

INTRODUCTION

The policies of the ASEAN economic community (AEC) has led to the introduction of rapid economic, social and environmental changes, especially, in employment conditions (e.g. wages,

working conditions, job insecurities and workload etc.) among Thai immigrant and other immigrant employees from other countries in Asia. It has been found that in AEC and Eastern Asia, there is an incremental trend of employee movement, while in various countries in the Asia Pacific region, employment conditions have become more complex (Niyomsilpa, 2011). A Thai report found that the movement of employees in many countries comprised of both native immigrant employees and foreigners who were moving both within countries and between countries in the Asia Pacific region. It indicated that the number of immigrants has strongly increased. It has become a turning point in lifestyle among immigrant employees. Turning points are related to changes in working conditions, workload, job security and wages among native immigrant employees and foreign immigrant employees both within countries and between countries in AEC societies (Ministry of Social Development and Human Security, 2013).

The AEC is made up of 10 member countries, of which Thailand is one. Every country needs native and foreigner employees; indeed, so does Thailand. AEC policies lead to positive increment in working lifestyles among Asian professional employees, who work in western countries but who want to return to ASEAN countries (Ministry of Social Development and Human Security, 2013). However, the majority of Thai immigrant employees still want to work in Thailand.

Statistical data from the National Statistical Office in 2014 found that Thai employees are stressed or have neuroses, and this is now the third largest health problem in Thailand (National Statistical Office, 2014). Prevention of occupational stress among Thai employees who are immigrant employees in Thailand is a key element of this study.

The theoretical framework of this study is that occupational stress is a social determinant of health from the public health perspective. The social determinants of health (Benach et al., 2010) focusses on working conditions, which are a causal variable of this study, under public health work, at a macro theoretical level. It describes the characteristics of working conditions/employment conditions that create pressure and tensions that bring on occupational stress. The public health perspective of occupational stress is that it is a psychosocial dimension of occupational health hazards (Gatchel & Schultz, 2012). The theoretical level is at the micro level (e.g. occupational stress). This framework can link the theoretical relationship between the macro and micro levels.

Previous studies found that causal stress among Thai farm workers under globalisation came from transnational corporations and transnational economics under globalisation were associated with farm worker stress. Transnational practices show weak associations with Thai state regulation, Thai state social protection, the Thai market, land holdings and technology

variables and their effects upon stress through indirect effects on Thai farm workers. This indicates that one result of globalisation, as in the AEC of Southeast Asian countries, is stress among Thai employees (e.g. farm workers) of Thailand (Kaewanuchit et al., 2015). Working conditions and wages are the factors most linked to stress among academic staff in government universities in Thailand (Kaewanuchit et al., 2015; Kaewanuchit & Phothong, 2015), as they are the most likely causes of stress in the workplace. This causal stress results from overload, poor working conditions/employment conditions and high job responsibilities (Dağdeviren et al., 2011; Wei et al., 2011; Zeynep, 2013).

In conclusion, the cause of occupational stress among native employees and immigrant employees in many countries is workload (Amponsah-Tawiah et al., 2014), poor working conditions (Akhavan et al., 2007; Font et al., 2011; Dunlavy & Rostila, 2013), low wages (Ahonen et al., 2009; Panikkar et al., 2013) and low job security/high job risk (Font et al., 2012). Occupational stress is linked to leave of absence from work due to sickness (Gatchel & Schultz, 2012), turnover, atherosclerosis (Fujishiro et al., 2013), hypertension (Fujishiro et al., 2013), lung cancer (National Statistical Office, 2014), stress at home and the workplace (Sjörs et al., 2014) and health inequality, among others (Dunlavy & Rostila, 2013). Moreover, research has found that the impact of physical and psychosocial risks on employee well-being and quality of life among employees in the mining industry in Ghana was poor (Amponsah-Tawiah et al., 2014). A study about work-related health problems among resident immigrant workers in Italy and Spain reported that their psychical health problems were skin diseases, musculoskeletal problems and respiratory problems. In both countries the risk of psychological stress was predominant among national workers, too (Rosano et al., 2012).

Thus, this research topic is important and it is necessary to study the path diagram of occupational stress among Thai immigrant employees in Bangkok, Thailand. The hypothesis of this study was that increment in working conditions, workload, job security and wages leads to occupational stress among Thai immigrant employees in Bangkok, Thailand.

OBJECTIVES

The aims of this study were (i) to examine the relationship between the variables of occupational stress using Thai-JCQ among Thai immigrant employees in Bangkok, Thailand by using a path diagram (ii) to determine each variable (i.e. working conditions, workload, job security and wages) on occupational stress among Thai immigrant employees in Bangkok, Thailand by using a path diagram.

Operational Definitions

The operational definitions were as follows:

1. Working conditions were related to questions about the exploitation of employees by their employers, the characteristics of their occupations that had an effect on occupational stress and if their work environment had an effect on occupational stress. Each item was rated on a 4-point Likert scale: 1=none, 2=less, 3=more, and 4=the most.
2. Workload associated questions such as control of job tasks per hour or day, number of working hours per day and wages per hour or day, evaluation of the job task in the period in order to collect data for qualification and how to determine suitability of job task. Each item was rated on a 4- point Likert scale ranging. Each item was rated on a 4-point Likert scale: 1=none, 2=less, 3=more, and 4=the most.
3. Job security was the employment condition used for temporary employment. It was found that employment conditions had an effect on job insecurity, long term over work per day, better work, turnover and an advanced career path. Each item was rated on a 4-point Likert scale: 1=none, 2=less, 3=more, and 4=the most.
4. Wages were measured by total income (baht per month).
5. The Thai immigrant employees surveyed worked in Bangkok, the capital city of Thailand. They were natives of other provinces in Thailand.
6. Occupational stress was assessed using the Thai Job Content Questionnaire (Thai-JCQ (Phakthongsuk, 2009), which was modified from Karasek for occupational stress screening in a Thai community setting in Thailand. The items can be grouped into six factors: job control, psychological demands of the job, physical demands of the job, job security, social support and hazards at work. The Thai-JCQ contained 54 questions. A sum of the weighted item scores was calculated for each scale. The total Thai-JCQ score had scores of slightly stressed (0-60 scores), moderately stressed (60-80 scores) and highly stressed (>80 scores), coded 1, 2, 3 and 4, respectively.

METHODOLOGY

Study Area

This study involved 11 districts in the Bangkok area of Thailand. Bangkok is an important area of Thailand because it is the capital city of Thailand and it is experiencing rapid economic growth. Most Thai immigrant employees move from the other provinces to work in Bangkok.

Participants

The participants of this cross-sectional study were 500 Thai immigrant employees (more than 20 years old and literate, with no limitations about sex, educational degree or career) who had worked in Bangkok, the capital city of Thailand.

Sample Size

The sample size was calculated by using the proportion formula of unknown population ($N=P\ (1-P)\ Z^2 / e^2$) and the M-plus guideline, with a 95% confidence interval. The sample size estimated a population of ≥384 Thai immigrants while the M-plus guideline suggested that the sample size was no less than 10-20 times the number of the parameters for the path model. Thus, the sample size of this study consisted of 500 Thai immigrant employees in Bangkok and had a large number of research subjects in order to decrease the proportional errors. The inclusion criteria was made up of Thai immigrant employees-aged >20 years old and literates who had worked in Bangkok, which is one out of 22 provinces in the central region of Thailand. Bangkok is undergoing rapid transition in the social, economic and high technological sphere. Thai immigrant employees who had worked in other provinces were excluded. Participants who did not want to reply to the questionnaire led to termination within the criteria, including their subject allocation.

Sampling Method

The sampling method of this study was stratified random sampling because measurements within the strata have lower standard deviation, and so stratification gives smaller errors in the estimates. In addition, this method is often desirable to create the estimates of the population parameters for groups within the population. This sampling method was divided into two strata. The first strata was grouped into the five regions of Thailand by stratified random sampling (the southern region, the northern region, the eastern region, the north-eastern region and the central region). Then, the central region of Thailand, which has 22 provinces, was selected by random sampling. The second strata had 22 provinces, which are located in the central region of Thailand. After that, Bangkok was selected by random sampling from these 22 provinces in the central region of Thailand. Therefore, Thai immigrant employees in this study who had worked in the capital city of Thailand (Bangkok) totalled 500 cases.

Research Instruments

Both applied and standard questionnaires were used as research instruments for this study. There were 74 questions in the questionnaire (20 closed items for the applied questions and 54 closed items for standard questions). The applied questionnaire contained individual data and the path diagram of occupational stress among Thai immigrant employees in Bangkok. Individual data was collected through six questions (work province, sex, educational level, marital status, age and occupation). The path diagram of occupational stress among Thai immigrant employees in Bangkok contained four exogenous/endogenous variables (i.e. working conditions, workload, job security and wages). Working conditions contained three items (i.e. the exploitation of employee by the employer, characteristics of their occupation that had an effect on

job stress and the stress-inducing effects of their working environment in the workplace. Workload consisted of four items (i.e. control of job task/amount of hours or days, consideration of outcome per day related to wages, control of the job task in the period used to collect data for the standard and an evaluation of the job task for its suitability). Job security comprised six items (i.e. employment conditions that used short-contract employment, employment conditions that had an effect on job insecurity, long-term work, better employment, turnover and enhanced career prospects). Participants were asked to rate each item in these variables on a 4-point Likert scale of 1 (none), 2 (less), 3 (more) and 4 (most). Wage variables were reported using the following codes: 1=≤5,000 baht, 2=5,001-10,000 baht, 3=10,001-15,000 baht, 4=15,001-20,000 baht, 5=20,001-25,000 baht, 6=25,001-30,000 baht, 7=30,001-35,000 baht, 8=35,001-40,000 baht, 9=40,001-45,000 baht, 10=45,001-50,000 baht, and 11=>50,000 baht. The 54-item version of the Thai-JCQ, which was the standard questionnaire, was used in this study for psychosocial work screening in Thai community settings of Thailand. This questionnaire was translated into Thai with minor modifications to assess the six major Thai-JCQ scales. The latter consisted of job control, psychological job demands, physical job demands, job security, social support and hazards at work. The job control dimensions were measured using 11 items (e.g. development of their own abilities). Psychological job demands were measured using 12 items (e.g. working hard, having enough time to do things). Physical job demands were measured using six items (e.g. conflicting demands, financial risks). Job security was measured using five items (e.g. Q32: Do you work on an annual basis?; Q33: Were you faced with unemployment last year?; Q34: You will become unemployed because of your employer in the next two years). Social support was measured using eight items (e.g. supervisor shows concern, supervisor pays attention, co-workers are friendly). Hazard/risks at work scales were measured using 12 items (e.g. equipment hazard, loud noise, occupational infection). For each item, the answer was reported on the 4-point Likert-type scale, ranging from 1=strongly disagree, 2=disagree, 3=agree and 4=strongly agree, except for items 32-34. For item 32, the answer was recorded on a 4-point Likert-type scale, ranging from "No, I am still an employee and sometimes laid off," "No, I am always laid off," "No, I work sometimes" and "I have worked every year" which scored 1, 2, 3 or 4, respectively. For item 33, the answer was recorded ranging from "I was unemployed/laid off last year," "always," "sometimes," and "none," which scored 1, 2, 3 or 4, respectively. For item 34, the answer was recorded on a 4-point Likert-type scale, ranging from 1=high, 2=sometimes, 3=seldom and 4=none, respectively. The sum of the weighted item scores was interpreted for each scale. The total Thai-JCQ score had slight stress (0-60 scores), moderate stress (60-80 scores)

and high stress (>80 scores), which were coded 1, 2, and 3 respectively. The Thai-JCQ was developed and validated using the Thai population in Thai society. Both the reliability and the validity of the questionnaire have been verified.

Verification of the Data Accuracy and Data Collection Procedure

The researcher sent questionnaires to five professors in Thailand to verify and check both the content and the construct validity. Reliability was checked by test-retest reliability and it was found that the reliability of working conditions, workload, job security, wages and occupational stress was 0.87, 0.88, 0.84, 0.80 and 0.85 using the SPSS programme to find the Cronbach's Alpha Coefficient. Then, the researcher sent the questionnaire to The Human Committee for Research Ethics. The research protocol was approved by The Committee for Research Ethics (social sciences), Mahidol University, Thailand, which issued it a certificate of approval numbered 2015/174.1905. Following this, the researcher registered the questionnaire in the Thai Clinical Trials Registry (TCTR). The TCTR identification number for the questionnaire was TCTR20150531001.

The researcher and assistant researchers introduced themselves to the participants, who were asked to distribute the questionnaires to Thai immigrant employees in Bangkok during their rest hour. Permission to conduct the study was recorded from each Thai immigrant employee. All the study participants expressed informed consent. A total of 500 of the studied Thai immigrant employees in Bangkok returned the questionnaires. Each participant returned a completed questionnaire within a closed box.

Data Analysis

The general data were tested on a personal computer using the SPSS statistical software package (version 15.0 for Windows; SPSS Inc. Chicago, IL). Variables were analysed for normality. All values were reported using frequency, percentage, minimum, maximum, mean and standard derivation (S.D.), kurtosis and skewedness for normally distributed variables. A path diagram of occupational stress using Thai-JCQ among Thai immigrant employees was completed with the use of a path analysis of variance, an analysis of the R square and a measurement of the goodness-of-fit to the path diagram using the M-plus programme (version 5.2).

RESULTS

Sample Characteristics

The participants (500 cases), who were Thai immigrant employees in Bangkok, were males (279 cases; 55.80%) and females (221 cases; 44.20%). They were mostly single (180 cases; 36.00%). One hundred and ninety-eight (39.60%) had a Bachelor's degree and their ages were 40-49 years old (175 cases; 35.00%). They were mostly temporary immigrant employees (130 cases; 26.00%) and their wages were mostly in the range of 20,001-25,000 baht/month (71 cases; 14.20%) (Table 1).

Table 1
Frequency and Percentage of Thai Immigrant Employees in Bangkok **(***N=500)*

Data	**Frequency**	**Percentage**
Sex : Female	221	44.20
: Male	279	55.8
Age (years) : 20-29	59	11.80
: 30-39	104	20.80
: 40-49	175	35.00
: 50-59	74	14.80
: > 60	88	17.60
Education : Primary school	42	8.40
: Secondary school	142	28.40
: Bachelor degree	198	39.60
: Master degree	92	18.40
: Doctoral degree	26	5.20
Occupation : Civil servant	80	16.00
: Employee university	100	20.00
: State enterprise employee	20	40.00
: Government employee	60	12.00
: Permanent employee	110	22.00
: Temporary employee	130	26.00
Wages (Baht per month) : ≤ 5,000	32	6.40
: 5,001-10,000	58	11.60
: 10,001-15,000	60	12.00
: 15,001-20,000	70	14.00
: 20,001- 25,000	71	14.20
: 25,001-30,000	45	9.00
: 30,001-35,000	35	7.00
: 35,001-40,000	48	9.60
: 40,001-45,000	36	7.20
: 45001-50,000	45	9.00
: > 50,000	0	0
Marital status : Single	180	36.00
: Window	142	28.40
: Divorce	49	9.80
: Separated	62	12.40
: Marriage	67	13.40

Note: Baht = US$33

The mean and S.D. of job security, wages (20,001-25,000 baht/month), workload, working conditions and occupational stress variables among Thai immigrant employees in Bangkok were 2.894 ± 1.106, 5.272 ± 2.695, 2.496 ± 1.254, 2.788 ± 1.177 and 2.116 ± 0.848, respectively. An analysis of the results found that negative skewedness in job security, workload, working conditions and occupational stress variables was -0.715, -0.040, -0.404 and -0.223, respectively. But an analysis of wages found a positive skewedness (0.248). An analysis of the results found that the negative kurtosis of job security, wages, working conditions and occupational stress variables was -0.830, -1.038, -1.641,-1.349 and -1.577, respectively (Table 2). The Pearson correlation among Thai immigrant employees in Bangkok of working conditions was the highest (r=0.446, p-value<0.01) (Table 3).

Table 2
Statistical Data of Thai immigrant Employees in Bangkok **(***N=500)*

Variable	**Mean**	**Minimum**	**Maximum**	**S.D.**	**Skewedness**	**Kurtosis**
Job securities	2.894 (more)	1 (none)	4 (most)	1.106	-0.715	-0.830
Wages (Baht/ month)	5.272 (20,001-25,000)	1 (≤ 5,000)	10 (>50,000)	2.695	0.248	-1.038
Workloads	2.496 (less)	1 (none)	4 (most)	1.254	-0.040	-1.641
Working conditions	2.788 (more)	1 (none)	4 (most)	1.177	-0.404	-1.349
Occupational stress	2.116 (moderate stress)	1 (slightly stress)	3 (high stress)	0.848	-0.223	-1.577

Table 3
Pearson Correlations

Variables	**Occupational stress**	**Job security**	**Wages**	**Workload**	**Working conditions**
Occupational stress	1.000				
Job security	0.308**	1.000			
Wages	0.037	-0.046	1.000		
Workload	0.403**	0.361**	-0.097*	1.000	
Working conditions	0.434**	0.201**	-0.058	0.446**	1.000

** p-value < 0.01, * p-value< 0.05

Overall Test of Goodness of Fit Indices

An analysis of the overall tests among Thai immigrant employees in Bangkok showed closed goodness-of-fit indices (chi-square=5.855, df=2, p-value=0.0535, CFI=0.983, TLI=0.927, RMSEA=0.000, SRMR=0.021). These variables could explain the occupational stress changes by 26.6% (R-square=0.266; p-value<0.01) (Table 4).

Table 4
Overall Test of Path Diagram for Thai Immigrant Employees in Bangkok (N=500)

Criteria	Value
Chi-Square	5.855 (df=2, p-value=0.0535)
CFI	0.983
TLI	0.927
RMSEA	0.000
SRMR	0.021
R-square (Occupational stress)	0.266**
R-square (Job securities)	0.131**
R-square (Wages)	0.010

** p-value<0.01

Path Diagram of Occupational Stress Using Thai-JCQ Among Thai Immigrant Employees in Bangkok

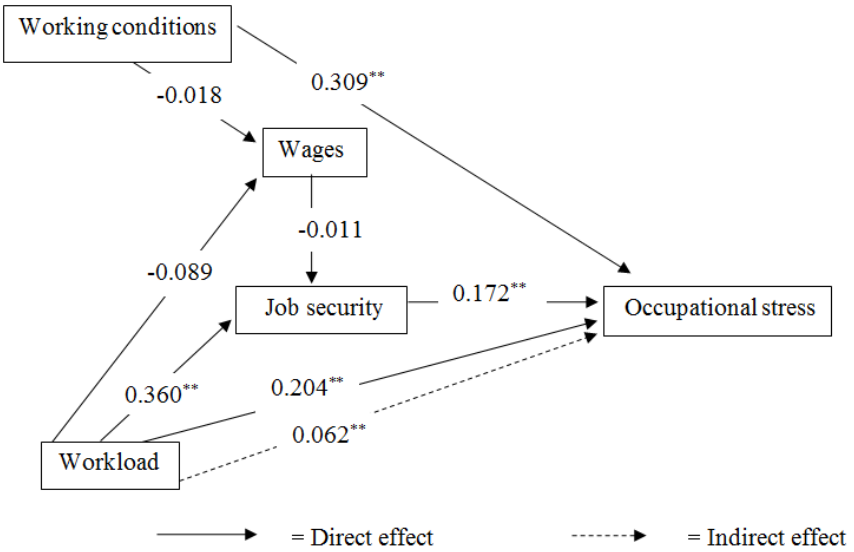
The path diagram displayed the mediating effect of wages and job security on the relationship between working conditions and occupational stress; including the direct and indirect relationships between workload and occupational stress. The results of this study found that both working conditions and workload had a direct effect on occupational stress, with standardised regression weights of 0.309 and 0.204 (p-value<0.01). Furthermore, workload had an indirect effect on occupational stress, with a standardised regression weight of 0.062 (p-value<0.01). Job security had a direct effect on occupational stress, with a standardised regression weight of 0.172 (p-value<0.01). Workload had a direct effect on job security, with a standardised regression weight of 0.360 (p-value<0.01). Workload and working conditions did not have a direct effect on job security (Table 5 and Figure 1).

Table 5
Direct, Indirect and Total Effect Among Thai Immigrant Employees in Bangkok (N=500)

Variables	Endogenous variables								
	Occupational stress			Job security			Wages		
	DE	IE	TE	DE	IE	TE	DE	IE	TE
Working conditions	0.309**	-	0.309**	-	-	-	-0.018	-	-0.018
Workload	0.204**	0.062**	0.266**	0.360**	0.001	0.361**	-0.089	-	-0.089
Job security	0.172**	-	0.172**	-	-	-	-	-	-
Wages	-	-	-	-0.011	-	-0.011	-	-	-

**p-value<0.01

DE = Direct Effect
IE = Indirect Effect
TE = Total Effect



** p-value < 0.01

Figure 1. Path diagram of occupational stress using Thai-JCQ among Thai immigrant employees in Bangkok (N=500).

DISCUSSION

Main Finding

This study is the first to investigate the path diagram of occupational stress using the Thai-JCQ among Thai immigrant employees in Bangkok, the capital city of Thailand, which has both Thai immigrant employees and foreigners. It demonstrated that occupational stress changed by 26.6 % (p-value<0.01). Based on the goodness-

of-fit indices among Thai immigrant employees in Bangkok, the model showed a close fit. Occupational stress leads to adverse health behaviours and certain psychical and mental health problems. Additionally, occupational stress has been shown to be a predictor of both poor physical health and poor mental health (Dunlavy & Rostila, 2013; Font et al., 2011; Fujishiro et al., 2013). Occupational stress is also known to decrease job performance, increase absenteeism and lead to high turnover and significant job conflicts between individuals and co-workers as well within the family of employees (Levy et al., 2011).

In spite of the likely effects of macro-social factors explained above on employee's health, occupational health models remain close to proximal psychosocial exposure, especially, occupational stress. The social determinants of health and public health perspectives under occupational health hazards (Benach et al., 2010) focus on working conditions, which is a causal variable of this study in public health work. It shows that working conditions create pressure and tensions that bring about occupational stress. Working conditions are created by employers, the occupation itself and the working environment (Gatchel & Schultz, 2012). The results of this study are consistent with the fact that poor working conditions, high workload, low wages and low job security are major causal factors of occupational stress. This implies that the variables at the macro theoretical level (e.g. working conditions, workload, wages and job security) have a causal effect on variables at the micro level (occupational stress).

The results of this study can be used to initiate steps towards developing community-based interventions with coping management, the prevention of mental health problems (e.g. occupational stress) and the development of a mental health policy geared towards economic competition within the ASEAN community and among Thai immigrant employees in Bangkok, Thailand. As reported in previous studies, migrant employees in Korea are a vulnerable population that show a relationship between occupational stress and depressive symptoms (Lee et al., 2009). Another study found that work-related psychosocial factors are salient facts that are associated with acculturative stress among Korean-Chinese immigrant employees living in Korea (Lee et al., 2012). Additionally, economic competition in the ASEAN Community has an effect on change as a signal of the complexity of employment conditions associated with occupational stress among both native employees and foreign employees within and between their countries. Immigrant employees in every group are faced with driving both international and national immigrant employee movement for economic competition in the ASEAN Community (Ministry of Social Development and Human Security, 2013).

In previous studies, high job responsibilities and conflicts were causal factors related to occupational

stress following the occupational health theory of the psychosocial dimension (De Castro et al., 2008; Rosano et al., 2012; Magnavita & Filen, 2013). Causal occupational stress was seen to have come from work overload and job insecurity among immigrant employees in Ghana and among immigrant employees in Spain (Font et al., 2011; Fujishiro et al., 2013). Additionally, poor working conditions are a causal relationship of occupational stress that lead to health inequality (Dunlavy & Rostila, 2013). A previous study of working conditions among female immigrant employees provided significant insight into physical and mental health (Akhavan et al., 2007; Ahonen et al., 2009). In Spain, research has found that low wages among immigrant employees were associated with both pressure and job stress (Ahonen et al., 2009); the same was true for the relationship between psychosocial dimensions among immigrant employees and mental health, where job security and psychosocial demand became causal factors due to job stress (Font et al., 2012). It was also found that job and environmental conditions and wages had a direct effect on stress among Thai university employees and female academic university employees (Kaewanuchit et al., 2015; Kaewanuchit & Phothong, 2015).

In the path diagram, variables were found to mediate the relationship between job security and job stress. These results of this study are consistent with some previous studies that found that the majority of immigrant employees had stress (Rosano et al., 2012; Kaewanuchit & Sawangdee, 2016) and anxiety (Lee et al., 2012; Magnavita & Filen, 2013).

The Strength of This Study

An occupational stress instrument was applied using the appropriate Thai-JCQ to the target Thai immigrant employees. It was developed from the Karasek model. This is the one outstanding strength of this study as it can display both specific and standard occupational stress measurements better than by just using general stress measurement guide and can provide better clarification when using the Thai version of the questionnaires for data collection from participants. The benefits of this study can be applied (i) to create health policy, especially, mental health policy by the government, (ii) to decrease health disaster expenditure for both government and employees, and (iii) to prevent the risk of mental health problems when considering government and community co-operation. The concepts used in this study can be linked to both the macro (social determinants of health) and micro (occupational stress) theoretical level under occupational health in public health work.

The Limitations and Recommendations of This Study

There were three limitations in conducting this study. The first limitation was that this study selected only Thai immigrant employees in Bangkok, Thailand and left out Thai immigrant employees in the other

regions of Thailand. These regions have their unique characteristics, and therefore, should be studied in future for comparison among every region in Thailand. The second limitation was that the study lacked a causal factor about the distance between the Thai immigrant employee participants' homes and their workplaces compared with other provinces that are similar to Bangkok. Previous Thai research found that the distance between the workers' home and workplace had a negative direct relationship on mental health with a standardised regression weight of -0.443 (p-value<0.01). Mental health levels showed the worst mental health among Thai immigrant employees in Pranakron Si Ayutthaya Province, Thailand (Kaewanuchit & Sawangdee, 2016); this should be studied or, more precisely, should be reexamined/ revisited in future research. There may also be effects on occupational stress that should have been examined for increasing causal factors in the path analysis. The third limitation was that this original research focussed on the quantitative method but some data were insufficient for proper discussion. Perhaps in future a qualitative study in this area and involving a much wider sample can be conducted.

CONCLUSION

This study found that occupational stress was a common mental health problem and a psychosocial dimension of occupational health hazards and is associated with the social determinants of health and public health perspective among Thai immigrant employees in Bangkok, Thailand. Using the Thai-JCQ, it was found that working conditions had the most direct relationship on occupational stress. In previous studies, the significant relationships of occupational stress were examined in different situations. But they were not clear in every situation. This outstanding research is linked at both macro and micro theoretical levels and shows that there are complexities at both levels. In addition, the results of this study have implications for public health perspectives under occupational health and practice when creating public health and occupational health policies, in that professionals should be aware of the importance of a comprehensive approach for occupational stress prevention in the immigrant population.

Competing Interests

The authors have no conflict of interest regarding this original article.

ACKNOWLEDGEMENTS

This study was part of a research project whose research title was 'A Path Model of Job Stress Using Thai Job Content Questionnaire (Thai-JCQ) Among Thai Immigrant Employees in the Central Region of Thailand'. The research team would like to thank the Thai immigrant employees who kindly participated in this study. Their time and input in completing the questionnaire survey is much appreciated. Our gratitude is also extended to Phranakhon Si Ayutthaya Rajabhat University, Thailand.

REFERENCES

Ahonen, E. Q., Porthé, V., Vázquez, M. L., García, A. M., López-Jacob, M. J., Ruiz-Frutos, C., ... ITSAL Project. (2009). A qualitative study about immigrant workers' perceptions of their working conditions in Spain. *Journal of epidemiology and community health, 63*(11), 936-942.

Akhavan, S., Bildt, C., & Wamala, S. (2007). Work-related health factors for female immigrants in Sweden. *Work, 28*(2), 135-143.

Amponsah-Tawiah, K., Leka, S., Jain, A., Hollis, D., & Cox, T. (2014). The impact of physical and psychosocial risks on employee well-being and quality of life: The case of the mining industry in Ghana. *Safety Science, 65*, 28-35.

Benach, J., Muntaner, C., Solar, O., Santana, V., & Quinlan, M. (2010). Introduction to the WHO Commission on Social Determinants of Health Employment Conditions Network (EMCONET) study, with a glossary on employment relations. *International Journal of Health Services, 40*(2), 195-207.

Dağdeviren, N., Musaoğlu, Z., Ömürlü, I. K., & Öztora, S. (2011). Factors effecting job satisfaction among academic staff. *Balkan Medical Journal, 28,* 69–74.

Dunlavy, A. C., & Rostila, M. (2013). Health inequalities among workers with a foreign background in Sweden: do working conditions matter? *International journal of environmental research and public health, 10*(7), 2871-2887.

Filiz, Z. (2014). An analysis of the levels of job satisfaction and life satisfaction of the academic staff. *Social Indicators Research, 116*(3), 793-808.

Font, A., Moncada, S., Llorens, C., & Benavides, F. G. (2011). Psychosocial factor exposures in the workplace: Differences between immigrants and Spaniards. *European Journal of Public Health, 22*(5), 688–693.

Font, A., Moncada, S., & Benavides, F. G. (2012). The relationship between immigration and mental health: what is the role of workplace psychosocial factors. *International archives of occupational and environmental health, 85*(7), 801-806.

Fujishiro, K., Diez-Roux, A. V., Landsbergis, P. A., Jenny, N. S., & Seeman, T. (2013). Current employment status, occupational category, occupational hazard exposure and job stress in relation to telomere length: the Multiethnic Study of Atherosclerosis (MESA). *Occupational and environmental medicine, 70*(8), 552-560.

Gatchel, R. J., & Schultz, I. Z. (2012). *Handbook of occupational health and wellness*. New York, NY: Spinger Science+Business Media.

Kaewanuchit, C., Muntaner, C., & Isha, N. (2015). A causal relationship of occupational stress among university employees. *Iranian Journal of Public Health, 44*(7), 931–938.

Kaewanuchit, C., Muntaner, C., Labonte, R., & Johnson, D. A. (2015). Stress among Thai farm workers under globalization: A causal model. *Pertanika Social Sciences & Humanities*, *23*(1), 169–182.

Kaewanuchit, C., & Phothong A. (2015). A study of causal relationship of occupational stress among female academic university employees. *Journal of Public Health, 45*(1), 58–70.

Kaewanuchit, C., & Sawangdee, Y. (2016). A path analysis of mental health among Thai immigrant employees in Pranakron Si Ayutthaya province. *Journal of Immigrant and Minority Health, 18*(4), 871–877.

Lee, H., Ahn, H., Miller, A., Park, C. G., & Kim, S. J. (2012). Acculturative stress, work-related psychosocial factors and depression in Korean-Chinese migrant workers in Korea. *Journal of occupational health, 54*(3), 206-214.

Lee, S. W., Kim, K. S., Kim, T. G., Ryu, H. W., Lee, M. Y., Won, Y. L., & Song, Y. H. (2009). The relationship between job stress and depressive symptoms in migrant workers in Kyung-gi province in Korea. *Korean Journal of Occupational and Environmental Medicine, 21*(1), 76-86.

Levy, B. S., Wegman, D. H., Baron, S. L., & Sokas, R. K. (2011). *Occupational and Environmental health: Recognizing and preventing disease and injury*. New York, NY: Oxford University Press, Inc.

Magnavita, N., & Fileni, A. (2014). Association of work-related stress with depression and anxiety in radiologists. *La radiologia medica, 119*(5), 359-366.

Ministry of Social Development and Human Security. (2013). *The satiation of immigrant employees.* Bangkok: Ministry of Social Development and Human Security.

National Statistical Office. (2014, August 30). *The survey of Thai immigrant population from The National Statistical Office.* Retrieved from http://social.nesdb.go.th/SocialStat/StatReport_FullScreen.aspx?reporti=83&template=3R1C&yeartype=M&subcatid=2.

Niyomsilpa, S. (2011). Change of migration patterns in Asia: Towards regional economic integration. In S. Punpuing & M. Sunpuwan (Eds.), *Thailand's population in transition: A turning point for Thai society* (pp. 67–84). Bangkok: Danetula Printing.

Panikkar, B., Woodin, M. A., Brugge, D., Desmarais, A. M., Hyatt, R., Gute, D. M., & Community Partners of the Somerville Community Immigrant Worker Project. (2013). Occupational health outcomes among self-identified immigrant workers living and working in Somerville, Massachusetts 2006–2009. *Journal of immigrant and minority health, 15*(5), 882-889.

Phakthongsuk, P. (2009). Construct validity of the Thai version of the job content questionnaire in a large population of heterogeneous occupations. *Journal Medical Association of Thailand, 92*(4), 564-72.

Pule, T. (2011). Mining activities and occupational health and safety at work. *The African Newsletter on Occupational Health and Safety, 21*(1), 4–7.

Rosano, A., Ronda-Pérez, E., García Benavides, F., Cacciani, L., Baglio, G., & Spagnolo, A. (2012). Work-related health problems among resident immigrant workers in Italy and Spain. *International Journal of Public Health, 9*(3), 68-74.

Sjörs, A., Ljung, T., & Jonsdottir, I. H. (2014). Diurnal salivary cortisol in relation to perceived stress at home and at work in healthy men and women. *Biological Psychology, 99*, 193–199.

Strasser, P. B., de Castro, A. B., Gee, G. C., & Takeuchi, D. (2008). Relationship between job dissatisfaction and physical and psychological health among Filipino immigrants. *Aaohn Journal, 56*(1), 33-40.

Sun, W., Wu, H., & Wang, L. (2011). Occupational stress and its related factors among university teachers in China. *Journal of occupational health, 53*(4), 280-286.