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Depression, Anxiety and Stress among Small and Medium Enterprise Workers in Indonesia, Malaysia, Thailand, and Vietnam

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Abstract

As a result of the December 2015 Southeast Asian regional economic integration, several potential issues may emerge among workers in the Association of Southeast Asian Nations (ASEAN) countries, including mental health and occupational health nursing concerns. This study was conducted to explore the levels of depression, anxiety and stress among Small and Medium Enterprise (SME) workers in four ASEAN countries: Indonesia, Malaysia, Thailand, and Vietnam. Participants included 2,041 SME workers (approximately 500 from each country) from food and textile industries. Data for this cross-sectional study was collected by self-administered questionnaire, including the Depression, Anxiety and Stress Scale (DASS-21). Multiple linear regression analyses were used to predict the levels of depression, anxiety and stress among SME workers. Depression had four significant predictor variables: age, sleep, employment status and working hours per week. Anxiety had five significant predictor variables: smoking, sleep, employment status, working hours per week and income. Stress had six significant predictor variables: marital status, smoking, sleep, employment status, working hours per week and income. As ASEAN economies become increasingly integrated, more efforts from occupational health and public health nursing professionals are needed to improve the psychological health and work conditions of SME workers in this region.

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1 Introduction

Mental illness is one of the leading contributors to chronic conditions worldwide and those living in developing countries are especially vulnerable to experiencing mental health problems [1]. As Southeast Asia continues to develop economically, it is imperative that attention is paid to the mental health of workers in this region. Of the 151 million people worldwide suffering from depressive disorders in 2008, the World Health Organization (WHO) reports that approximately 80 million live in Southeast Asia or the Western Pacific Region [2]. This cross-sectional study aims to understand how workplace and lifestyle factors affect the mental health of small and medium enterprise (SME) workers in Southeast Asia in order to provide recommendations for improving the occupational health, psychological health and work conditions of SME workers in this region.

A plethora of factors can affect the mental health of individuals throughout Asia, including work conditions, social support and migration [3-5]. Labor-intensive work and high job demands have been linked to job strain, mental illness and negative effects on physical health [6-10]. Despite the association between job strain and mental illness, few studies have explored SME workers' mental health in Southeast Asia. This lack of research is problematic because SME workers represent a majority of the working population in this region. This study seeks to expand upon current research by identifying significant variables that affect the mental health of SME workers, specifically in Indonesia, Malaysia, Thailand and Vietnam. These four countries were selected as a representative sample of the ten ASEAN countries due to their varying sizes, locations, population, GDP and economic development stages. In December 2015, the ten ASEAN countries officially integrated to form the ASEAN Economic Community, which allows the free flow of goods, services, investments and labor among these countries. As a single entity, the ASEAN Economic Community ranks the seventh largest economy in the world and the third most populous. While economic growth is understood to have positive indications for each country and its citizens, it is important to be aware of the mental health consequences that increasing workplace demands may bring. As a starting point for this study, the mental health situation in each of the four countries of focus will be briefly examined.

1.1 Mental and Occupational Health among Indonesian Workers

Globalization has been noted as a contributing factor to occupational health issues throughout Indonesia [11-13]. Changes in this country resulting from globalization have resulted in more occupations involving hazardous work, greater job

insecurity, high work pace, long and irregular work hours, low income, low decision latitude, and high effort-reward imbalance [11,12]. Additional factors such as internal migration, heightened stress, lack of sleep, old age, poverty, and arduous life circumstances have contributed to depression in Indonesia [14,15]. With the plethora of work-related factors contributing to mental and physical health issues in a country that is poised for continued economic growth, it is imperative to conduct research among Indonesia's SME worker population in order to create protective workplace recommendations. Tadjoeddin [16] reinforces this perspective, contending that despite Indonesia's main focus on economic and employment growth, focus should be placed instead on the quality of employment throughout the country.

1.2 Mental and Occupational Health among Malay Workers

Pressures from globalization have propelled Malaysia to adopt Western performance systems that encourage downsizing and merging [17]. Although these adoptions have resulted in greater productivity, they have also led to altered work structures that increase employee job demand and decrease employee job control [17]. These changes in work structures have negatively impacted workers' mental health, as reflected in increased reports of stress, anxiety, and depression among Malaysian employees [17]. Financial difficulties, relationship issues with families and spouse, old age and divorce were also noted to be top predictors of depression and anxiety among the Malaysian population [5,18]

The correlation between job stress and mental health issues in Malaysia is also influenced by gender. Rusli et al. [10] found that Malay women who reported having high job demand and low job control had the worst health status. Deva [19] asserts that women represent the most vulnerable population in Malay society, as they often must move away from home in order to seek employment. This migration entails lower protection and greater vulnerability to social problems, and leads to a greater likelihood of common mental health disorders [19]. While research has been conducted on employment in connection to stress, anxiety and depression, there is limited research among SME workers in Malaysia. Considering the fact that SMEs represent approximately 97.3% of all business establishments in Malaysia [20] it is crucial to gain a better understanding of the influence of workplace environment on SME workers' mental health.

1.3 Mental and Occupational Health among Thai Workers

Thailand's recent industrialization has resulted in increased employment across industrial sectors. In 2015, 26 million Thai workers were employed in non-agriculture sectors, including manufacturing, construction, wholesale and retail trade and food service work. This figure reflects an increase of 360,000 workers since 2014 [21]. With the country's increasing economic progress and

growth, job satisfaction and strain have become relevant issues. In one study, Kaewboonchoo et al. [3] found that more than half of a SME worker sample reported high job stress, with women reporting higher levels of stress than men. Charoenpaitoon et al. [7] reported a prevalence rate of 28.8% for depression in female electronic factory workers, which is significantly higher than the national prevalence rate of 4% among Thai females. Among beverage factory workers, 33.5% of workers reported poor mental health, with anxiety and insomnia being the most prevalent issues [8]. Poor family relationships, poor social support, low rewards, level of job satisfaction and work security have been identified as factors influencing Thai workers' mental health [7,8].

Within the limited research, gender has been noted as a distinct factor affecting the mental health of Thai workers. In Thailand, many women find themselves putting aside education in order to fulfill their multiple roles as wife, mother and wage earner by internally migrating to city slums for blue collared work [7]. Moreover, job strain has been associated with psychological distress in pregnant Thai women working full-time, while coping strategies such as avoidance, blaming oneself, and wishful thinking were positively correlated to distress within this population [22]. Women's adverse living situations and multiple roles are associated with several factors noted by research studies to affect mental health. Among these factors are shift work, working overtime, poor working conditions, as well as low reward in return for input of effort [7].

Although the growing economy has contributed to certain workplace issues, it is important to note that Thailand also experienced a recent economic downturn that resulted in a great deal of Thai workers losing their jobs [7]. In response to this, employees who were able to maintain employment throughout this economic dip put forward even greater effort and commitment to work, leading to longer hours and increased workloads. Chronically heavy workloads are likely to have an eventual negative impact on the mental health of Thai workers, and it is important to study the mental health of this population further.

1.4 Mental and Occupational Health among Vietnamese Workers

Vietnam is no exception to the rising global concern over mental health, although negative cultural beliefs surrounding mental illness may deter members of this population from seeking mental health care. Somatic symptoms are more commonly reported than emotional symptoms in Vietnam and are typically motivators to seek health care [23]. Vietnamese citizens may be more apt to look for mental health solutions outside of the country's formal health care infrastructure for fear of being stigmatized. As a result, seeking family support or care is most often cited as the course of treatment for mental illness [24]. Consequently, mental illness becomes a burden on the family, as caregivers attend to mentally ill family members and neglect the use of mental health services available in the community [24].

Research on mental health in Vietnam has been sparse; however, several studies have explored depression rates among subsets within the Vietnamese population. Fisher et al. [25] found that 33% of women in their sample had clinically significant postpartum symptoms and that 19% expressed suicidal ideation. Men have also expressed perinatal common mental disorders and alcohol dependence, with prevalence rates of 17.7% and 33.8% respectively [26]. Despite the limited research on the mental health of Vietnamese workers, existing studies suggest that mental health issues and strain are notable within the Vietnamese working population. Minh [27] found a prevalence rate of 20.7% of high job strain and 18.8% of depression in workers employed at a shoe factory. High psychological demand, low to moderate support, inadequate work protection materials and work absenteeism were linked to experiencing work-related depression in the same study.

1.5 The Present Study

There is an overall deficiency of research regarding the mental health of SME workers in Indonesia, Malaysia, Thailand and Vietnam. Greater focus on mental health and employment in SMEs is therefore crucial, as factors such as globalization and improved technology have led to increasing job demands and job strain. An increased focus on in-depth research will help create greater understanding and ultimately greater resources for the working population in Indonesia, Malaysia, Thailand and Vietnam.

As mental health is often affected by and has been linked to work environment or job satisfaction, more research needs to be done to study the mental health of workers in the four aforementioned Southeast Asian countries, specifically among workers in SMEs. Despite economic advancement and higher levels of employment in the region, few studies have been conducted that have examined the mental health of SME workers in Southeast Asia in regard to levels of depression, anxiety and stress. Further exploration would provide a deeper understanding of mental health among Southeast Asian workers, as well as the ways in which occupation and mental health are linked.

2 Methods

2.1 Participants and Procedures

This cross-sectional study focuses on the mental and occupational health of SME workers in the food and textile industries in Indonesia, Malaysia, Thailand and Vietnam. These two industries were chosen due to the fact that they are common industries of employment across all four countries. The definition of SME for this study is a small and medium enterprise with less than 250 employees. For this

study, the food industry includes restaurant, catering, distribution, preparation and processing; the textile industry includes spinning, weaving, dying, garment, sewing, ironing, cutting, and designing.

Ethics approval was obtained from the Ethics Review Committee of the local university in each of the four countries. Each volunteer participant read and signed the informed consent form prior to completing the survey for this study. A total of 2,041 SME workers from Indonesia, Malaysia, Thailand and Vietnam participated in this study. Each participant was required to be between 18 to 60 years old and could not be a migrant or foreign worker. Vietnam had the highest number of participants (n = 534), followed by Indonesia (n = 530), Malaysia (n = 497), and Thailand (n = 480). The majority (60.2%) of participants were female (n = 1,228).

SME workers who participated in this study showed fairly equal representation of the food and textile industries. Participants in Indonesia reported the highest average number of working hours per week (65.8 hours/week), but the lowest average monthly wages (US$146). Conversely, Malaysian workers reported the lowest average number of working hours per week (48.1 hours/week) and the highest average monthly income (US$467). The majority of participants in each country with the exclusion of Thailand reported that they were permanently employed. See Table 1 for socio-demographic and occupational characteristics of participants.

Table 1: Socio-demographic and occupational characteristics of the participants

Variables		Indonesia	Malaysia	Thailand	Vietnam
		n (%)	n (%)	n (%)	n (%)
Gender	Male	374 (69.0)	214 (43.1)	145 (30.2)	80 (15.0)
	Female	156 (31.0)	283 (56.9)	335 (69.8)	454 (85.0)
Age, mean (SD)		33.0 (9.8)	29.7 (8.6)	36.9 (9.7)	30.3 (8.9)
Years of education, mean (SD)		8.5 (2.8)	11.3 (3.0)	8.9 (3.6)	10.0 (3.2)
Marital status	Single	141 (28.0)	314 (63.2)	158 (32.9)	214 (40.1)
	Married	351 (69.8)	181 (36.4)	271 (56.5)	306 (57.3)
	Divorce/Widow	11 (2.2)	2 (0.4)	51 (10.6)	14 (2.6)
Religion	Muslim	491 (97.6)	330 (66.4)	1 (0.2)	1 (0.2)
	Buddhist	1 (0.2)	30 (6.0)	471 (98.1)	298 (55.8)
	Hindu	9 (1.8)	79 (15.9)	1 (0.2)	0 (0.0)
	Christian	0 (0.0)	0 (0.0)	4 (0.8)	41 (7.7)
	Others	2 (0.4)	2 (0.4)	1 (0.2)	194 (36.3)
Smoking status	Yes	264 (52.5)	100 (20.1)	73 (15.2)	36 (6.7)
	No	239 (47.5)	397 (79.9)	399 (83.1)	498 (93.3)
Alcohol intake	Yes	18 (3.6)	84 (16.9)	93 (19.4)	121 (22.7)
	No	485 (96.4)	413 (83.1)	382 (79.6)	413 (77.3)
Sleep duration / day, mean (SD)		6.6 (1.4)	7.5 (1.7)	7.1 (1.2)	7.8 (1.1)
Exercise	Yes	172 (34.2)	160 (32.2)	279 (58.1)	285 (53.4)
	No	331 (65.8)	337 (67.8)	198 (41.3)	249 (46.6)
Type of industries	Food	269 (53.5)	245 (49.3)	245 (51.0)	251 (47.0)
	Textile	234 (46.5)	252 (50.7)	235 (49.0)	283 (53.0)
Employment status	Permanent	318 (63.2)	378 (76.1)	184 (38.3)	276 (51.7)
	Non-permanent	185 (36.8)	119 (23.9)	242 (50.4)	258 (48.3)
Employment duration in months, mean (SD)		48.5 (57.6)	51.8 (45.1)	92.1 (99.8)	67.2 (61.3)
Working hours per week, mean (SD)		65.8 (18.1)	48.1 (14.5)	55.7 (12.0)	51.9 (8.7)
Overtime (hours/week) mean (SD)		2.2 (5.4)	3.3 (1.1)	9.5 (7.9)	3.4 (5.6)
Monthly income (US$), mean (SD)		146 (85)	467 (184)	286 (88)	151 (44)

2.2 Measurement

The current study utilized translated versions of the Depression Anxiety Stress Scale (DASS-21) to measure levels of depression, anxiety, and stress among SME workers in the four countries of focus. This shortened version of the original DASS-42 has been established as a reliable and valid measurement of depression,

anxiety and stress for both clinical and non-clinical samples in Asia, Australia, England, the United States, and Canada [28-32]. Within the DASS-21, depression is measured as hopelessness, dysphoria, anhedonia and low energy. Anxiety is assessed as autonomic arousal, which manifests in agitation and physiological symptoms, such as difficulty breathing or sweaty palms. Stress refers to chronic arousal in which one experiences tension, irritability, and nervousness. Symptoms of depression, anxiety and stress are measured from over the past week with 4-point Likert scale of 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time).

Oei et al. [32] included Indonesian employees as a part of their study on the DASS-21, demonstrating reliability coefficients ranging from 0.72 to 0.87 on the three scales with their Indonesian sample. Several studies in Malaysia have explored the psychometric properties of the DASS-21 translated into Bahasa Malaysia, which has demonstrated evidence of good reliability as well as concurrent and construct validity [31, 33]. Specific to Malaysia's working population, the DASS-21 has been used to measure negative emotional states of depression, anxiety, and stress in Malay police workers [34]. The DASS-21 has been used to measure negative emotional states in Thai youth, and was found in one study to have excellent internal consistency ranging from 0.89 to 0.96 on the three scales35, 36). Oei et al. [32] also included Thai workers as a part of their sample, and found validity and good reliability of the modified version of the DASS-21. Tran et al. [37] found that the translated version of the DASS-21 had good internal reliability with women living in a rural province of northern Vietnam, with Cronbach's alpha ranging from 0.70 to 0.77 on the three scales, and 0.88 for the overall scale. In the same study, the overall scale was also shown to be sensitive in detecting common mental disorders within this specific population.

3 Results

According to the DASS-21 severity ratings, the mean levels of depression, anxiety and stress among SME workers in Indonesia, Malaysia, Thailand, and Vietnam can generally be categorized as normal. The one exception is the average level of anxiety in Indonesia (3.73), which is categorized as mild. Although the average levels of depression, anxiety, and stress in these four countries fall into the normal category, the range of scores within each country reflects the presence of severe and extremely severe levels across all three conditions (see Table 2).

Table 2: Depression, anxiety, and stress among SME workers in Indonesia, Malaysia, Thailand, Vietnam

Country	Depression		Anxiety		Stress	
	Mean (SD)	Range	Mean (SD)	Range	Mean (SD)	Range
Indonesia	2.29 (2.59)	0-15	3.73 (3.13)	0-18	4.46 (3.31)	0-18
Malaysia	0.90 (2.54)	0-19	0.99 (2.49)	0-18	1.15 (2.86)	0-20
Thailand	2.69 (3.22)	0-17	2.48 (3.28)	0-19	4.09 (3.85)	0-19
Vietnam	1.31 (2.13)	0-14	1.41 (2.03)	0-15	2.19 (2.47)	0-12

Malaysian workers reported the lowest average levels of depression, anxiety, and stress. Despite these low averages, Malaysian study participants also showed the widest range of reported severity across all three conditions. The scores of 19 for depression and 20 for stress were the highest among any country included in this study. Vietnamese SME workers reported the second-lowest averages of depression, anxiety and stress. Study participants from Vietnam also showed the smallest range of reported cases across all three conditions. The most serious reported case of stress in Vietnam falls within the moderate range, making this the only country included in this study without a reported case of serious stress.Mean levels of depression, stress, and anxiety in Thailand and Indonesia are comparable. While Thailand shows a slightly higher average of reported stress, the mean level of reported anxiety among participants in Indonesia is higher than all three of the other countries included in this study. Indonesian workers also report the highest level of stress. Thailand reports the second highest level of stress, followed by Vietnam. Because stress has the largest range that is considered normal, the mean levels within each country can be considered fairly low.

Table 3: Bivariate Pearson correlations of model indicators for depression, anxiety, and stress

Variables	**Depression**	**Anxiety**	**Stress**
Gender	0.01	-0.07**	-0.03
Age	0.11**	0.07*	0.09**
Education	-0.09**	-0.12**	-0.12**
Marital status	0.11**	0.10**	0.14**
Smoking	0.07**	0.15**	0.11**
Alcohol	-0.01	0.04	0.01**
Exercise	-0.03	-0.01	-0.01
Sleeping time	-0.12**	-0.18**	-0.16**
Employment status	0.07**	0.073**	0.10**
Duration of employment	0.02	-0.01	0.01
Working hours per week	0.13**	0.22**	0.18**
Overtime work	0.07*	-0.002	0.05
Income	-0.18**	-0.24**	-0.28**

Note: * $p < .05$, ** $p < .01$

Pearson product correlations of measured variables are displayed in Table 3. For depression, there were significant positive correlations with age, marital status, smoking, employment status, working hours per week and overtime work as well as significant negative correlations with education, sleep and income. For anxiety, there were significant positive correlations with age, marital status, smoking, employment status and working hours per week as well as significant negative correlations with gender, education, sleep, and income. For stress, there were significant positive correlations with age, marital status, smoking, alcohol, employment status and working hours per week as well as significant negative correlations with education, sleep and income.

Table 4: Factors related to depression among SME workers of Indonesia, Malaysia, Thailand, and Vietnam by multiple regression analysis

Factors	**Standardized coefficient**	**p-value**
Age	0.108	0.002**
Education	-0.039	0.177
Marital status	0.012	0.732
Smoking	0.039	0.166
Sleeping time	-0.070	0.015*
Employment status	0.059	0.032*
Working hours per week	0.072	0.013*
Overtime work	0.042	0.121
Income	-0.040	0.154

Note: * $p < .05$, ** $p < .01$

Multiple linear regression analyses were used to predict the levels of depression, anxiety and stress among SME workers in Indonesia, Malaysia, Thailand, and Vietnam. Age, sleep, employment status, and number of working hours per week were significant predictors of depression among SME workers (Table 4). Age, employment status, and working hours had significant positive impact on depression while sleep had significant negative impact. Smoking, sleep, employment status, income and number of working hours per week were shown to be significant predictors of anxiety among the SME population in this study (Table 5).

Table 5: Factors related to anxiety among SME workers of Indonesia, Malaysia, Thailand, and Vietnam by multiple regression analysis.

Factors	**Standardized coefficient**	**p-value**
Gender	0.003	0.913
Age	0.001	0.971
Education	-0.036	0.129
Marital status	0.053	0.060
Smoking	0.108	0.000***
Sleeping time	-0.125	0.000***
Employment status	0.067	0.003**
Working hours per week	0.134	0.000***
Income	-0.159	0.000***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Smoking, employment status and working hours had significant positive impact on anxiety while sleep and income had a significant negative impact. Factors shown to be significant predictors of stress included marital status, smoking, sleep, employment status, income, and working hours per week (Table 6). Marital status, smoking, employment status, and work hours had significant positive impact on stress while sleep and income had a significant negative impact.

Table 6: Factors related to stress among SME workers of Indonesia, Malaysia, Thailand, and Vietnam by multiple regression analysis.

Factors	**Standardized coefficient**	**p-value**
Age	0.016	0.562
Education	-0.037	0.117
Marital status	0.082	0.003**
Smoking	0.083	0.000***
Sleeping time	-0.112	0.000***
Employment status	0.088	0.000***
Working hours per week	0.090	0.000***
Income	-0.203	0.000***

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

4 Discussion

Findings from this study provide a cross-cultural picture of mental health in this region at a time when studies are lacking in developing countries [38]. It also provides an alternative to the commonly Western-centric view of work-related depression, anxiety, and stress [38]. In addition, by examining lifestyle factors

such as smoking, sleeping time, educational status, marital status and income, this study explored variables outside of the workplace in order to gain a holistic picture of mental health issues among SME workers. Findings of this study therefore revealed protective factors against depression, anxiety, and stress that can help inform SME workplace policies as well as general lifestyle recommendations for the population in focus.

Sleeping time is the only factor that showed significant negative impact against all three conditions of depression, anxiety, and stress. This finding is consistent with past research studies that show correlations between poor sleeping habits and higher reported levels of depression, anxiety and stress [39]. The fact that Indonesian study participants reported the lowest average hours of sleep per night and the highest average levels of depression, anxiety, and stress is another potential indicator of the converse relationship between sleep and mental health. This study's finding that Indonesian SME workers report the lowest average level of monthly income (US$146) and the highest average levels of depression, anxiety and stress provides evidence for the negative correlation between poverty and mental health in both developed and developing countries [15]. This finding suggests that with a reduction of financial stressors in SME worker's life may come a reduction of depression, anxiety, and stress.

This study also showed that working hours per week have significant impact on depression, anxiety and stress within the SME worker population in this region. As SME workers in Southeast Asia continue to attempt to keep up with the demands of globalization, it is important to note that increasing workplace demands have a negative effect on their mental health. Beyond working conditions, smoking is a lifestyle factor that showed significant impact on anxiety and stress. A majority of study participants from Indonesia (52.5%) reported smoking, a factor that may contribute to this population's increased levels of depression, anxiety and stress. This is a relationship that has been shown in other regions of the world as well. For example, a recent study in Bosnia found that adults who reported higher levels of stress also consumed more alcohol and smoked more cigarettes than a comparative group reporting lower stress levels [40].

5 Limitations

As this was a cross-cultural study conducted in four different countries in four different languages, it is possible that language variations contributed to variances in the collected data. In order to control for and protect against such issues, data was collected in the local language and evaluated by local teams in each participating country. In addition, although the data in Table 1 represent a large variety of occupational and socio-demographic characteristics, there may be other factors that contribute to varying levels of depression, anxiety, and stress among

SME workers in Southeast Asia. Future studies examining additional demographic factors would be beneficial. Furthermore, this study focused only on four ASEAN countries. It will be important to expand this research to the six other countries in the ASEAN Economic Community in order to establish the baseline mental health conditions for SME workers at the beginning of the regional economic integration as well as to monitor the mental health conditions for a longitudinal study.

6 Conclusion

The positive mental health benefits of sleeping and negative mental health consequences of smoking are instructive when considering specific public health and occupational health interventions for each country. Occupational health nurses, policymakers, workplace managers, and public health officials should advocate for smoking reduction measures that are appropriate within their national culture. For example, workplace officials and occupational health nurses may consider implementing a no smoking policy in order to reduce this behavior among employees. Occupational health nurses, workplace managers and public health officials should also raise awareness of the positive benefits of increased sleep. They may, for example, consider flexible working hours to let employees who work late into the evening come in a bit later in the morning. In general, it is important for workers to understand the link between physical and mental health and to not feel stigmatized by prioritizing their mental health. This link is not always emphasized in developing countries, where attention to physical health can sometimes be considered a luxury.

In addition to physical health interventions such as smoking reduction programs and educational public health programs around the benefits of sleep, it is important to consider how mental health improvement programs may be incorporated into the workplace. Pre-work group exercise, meditation rooms, mid-day walks, and stretch breaks have been successfully implemented in various workplaces globally. Other possible interventions that have been found to be effective in the workplace include relaxation therapies and biofeedback [41, 42]. Specific interventions for each ASEAN country must be culturally appropriate and financially feasible for the local SMEs. It will be important to test different types of occupational and mental health workplace interventions to see which types produce the most beneficial outcomes. In conclusion, occupational health and public health nursing professionals can draw from the findings of this study as they work together to create a holistic approach to improving workplace conditions for SME workers in Southeast Asia.

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References

[1] V. Patel, B. Saraceno, and A. Kleinman, Beyond evidence: The moral case for international mental health, *American Journal of Psychiatry*, **163** (8), (2006) 1312–1315.

[2] World Health Organization, *The Global Burden of Disease: 2004 Update*, (2008). http://www.who.int/healthinfo/global_burden_disease/GBD_report_2004update_full.pdf

[3] O. Kaewboonchoo, S. Saleekul, and S. Usathaporn, Factors related to work ability among Thai workers, *Southeast Asian Journal of Tropical Medicine & Public Health*, **42**, (2001), 225-230.

[4] S. Krishnaswamy, K. Subramaniam, A. A. Jemain, et al., Common mental disorders in Malaysia: Malaysian mental health survey, 2003-2005, *Asia-Pacific Psychiatry*, **4**, (2011), 201-209.

[5] S. F. K. Maideen, S. M. Sidik, L. Rampal, and F. Mukhta, Prevalence, associated factors and predictors of depression among adults in the community of Selangor, Malaysia, *BMC Psychiatry*, **15**, (2015), 1-12.

[6] B. D. Azia, B. N. Rusli, T. Winn, L. Nain, and M. A. Tengku, Prevalence and associated factors of job-related depression in laboratory technicians in Hospital Universiti Sains Malaysia (HUSM) and Ministry of Health Malaysia (MOH) hospitals in Kelantan, *Medical Journal of Malaysia*, **59** (2), (2004), 268-278.

[7] S. Charoenpaitoon, A. Jirapongsuwan, S. Sangon, P. Sativipawee, and S. Kalampakomrn, Factors associated with depression among Thai female workers in the electronics industry, *Journal of the Medical Association of Thailand*, 95 (6), (2012), S141-S146.

[8] J. Kanda, The influence of job satisfaction on mental health of factory workers, *The Internet Journal of Mental Health*, **7**(1), (2009). Available from: https://ispub.com/IJMH/7/1/9829

[9] K. P. Minh, Work-related depression and associated factors in a shoe manufacturing factory in Haiphong City, Vietnam, *International Journal of Occupational Medicine and Environmental Health*, **27**(6), (2014), 950-985.

[10] B. N. Rusli, B. A. Edinmansyah, and L. Naing, Working conditions, self perceived stress, anxiety, depression and quality of life: A structural equation modeling approach, *BMC Public Health*, **8**, (2008), 48.

[11] S. A. Febriana, F. Junbauer, H. Seobono, and P. J. Coenraads, Inventory of the chemicals and the exposure of the worker's skin to these at two leather

factories in Indonesia, *International Archive of Occupational and Environmental Health*, **85**, (2012), 517-526.
[12] B. Widanarko, S. Legg, J. Devereux, and M. Stevenson, Raising awareness of psychosocial factors in the occurrence of low back symptoms in developing countries, *Work*, **41**, (2012), 5734-5736.
[13] B. Widanarko, S. Legg, M. Stevenson, J. Devereux, and G. Jones, Prevalence of low back symptoms and its consequences in relation to occupational group, *American Journal of Industrial Medicine*, **56**, (2013), 576-589.
[14] Y. Lu, Y, Mental health and risk behaviors of rural-urban migrants: Longitudinal evidence from Indonesia, *Population Studies*, **64**(2), (2010), 147-163.
[15] G. Tampubolon and W. Hanadita, Poverty and mental health in Indonesia, *Social Science & Medicine*, **106**, (2014), 20-27.
[16] M. Z. Tadjoeddin, Decent work: On the quality of employment in Indonesia, *Asian Journal of Social Sciences*, **42**, (2014), 9-44.
[17] M. A. Idris, M. F. Dollard, and A. H. Winefield, The effect of globalization on employee psychological health and job satisfaction in Malaysian workplaces, *Journal of Occupational Health*, **53**, (2011), 447-454.
[18] S. Krishnaswamy, K. Subramaniam, A. A. Jemain, et al. Common mental disorders in Malaysia: Malaysian mental health survey, 2003-2005, *Asia-Pacific Psychiatry*, **4**, (2011), 201-209.
[19] M. P. Deva, Malaysia mental health country profile, *International Review of Psychiatry*, **16**, (2004), 167-176.
[20] SME Corp Malaysia, *SME Annual Report 2011/2012*, (2012). Available from: http://www.smecorp.gov.my/index.php/en/resources/2015-12-21-11-07-06/sme-annual-report/book/4-annual-report-2011/2-annual-report
[21] National Statistics Office of Thailand, *The Labor Force Survey: September 2015*, (2015). Available from: http://web.nso.go.th/
[22] N. Sanguanklin, B. L. McFarlin, L. Finnegan, et al., Job strain and psychological distress among employed pregnant Thai women: Role of social support and coping strategies, *Archives of Women's Mental Health*, **17**(4), (2014), 317-326.
[23] K. B. Giang, T. V. Dzung, G. Kullgren, and P. Allebeck, Prevalence of mental distress and use of health services in a rural district in Vietnam, *Global Health Action*, **3**, (2010), 1-10.
[24] L. van der Ham, P. Wright, T. V. Van, V. D. Doan, and J. E. Broerse, Perceptions of mental health and help-seeking behavior in an urban community in Vietnam: An explorative study, *Community Mental Health Journal*, **47**(5), (2011), 574-582.
[25] J. R. Fisher, M. M. Morrow, N. T. Ngoc, and L. T. Anh, Prevalence, nature, severity and correlates of postpartum depressive symptoms in Vietnam,

BJOG: An International Journal of Obstetrics and Gynecology, **111**(12), 2004, 1353-1360.

[26] J. Fisher, T. D. Tran, T. T. Nguyen, and T. Tran, Common perinatal mental disorders and alcohol dependence in men in northern Vietnam, *Journal of Affective Disorders*, **140**, (2012), 97-101.

[27] K. P. Minh, Work-related depression and associated factors in a shoe manufacturing factory in Haiphong City, Vietnam, *International Journal of Occupational Medicine and Environmental Health*, **27**(6), (2014), 950-958.

[28] M. M. Antony, P. J. Bieling, B. J. Cox, M. W. Enns, and R. P. Swinson, Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample, *Psychological Assessment*, **10**(2), (1998), 176-181.

[29] J. D. Henry and J. R. Crawford, The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample, *British Journal of Clinical Psychology*, **44**(2), (2005), 227-239.

[30] P. F. Lovibond and S. H. Lovibond, The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories, *Behaviour Research and Therapy*, **33**(3), (1995), 335-343.

[31] R. Musa, R. Ramli, K. Abdullah, and R. Sarkarsi, Concurrent validity of the depression and anxiety components in the Bahasa Malaysia version of the Depression Anxiety and Stress Scales (DASS), *ASEAN Journal of Psychiatry*, **12**(1), (2011), 66-70.

[32] T. P. S. Oei, S. Sawang, Y. W. Goh, and F. Mukhtar, Using the Depression Anxiety Stress Scale 21 (DASS-21) across cultures, *International Journal of Psychology*, **48**(6), (2013), 1018-1029.

[33] R. Musa, M. A. Fadzil, and Z. Zain, Translation, validation and psychometric properties of Bahasa Malaysia version of the Depression Anxiety and Stress Scales (DASS), *ASEAN Journal of Psychiatry*, **8**(2), (2007), 82-89.

[34] R. Masilamani, A. Bulgiba, K. Chinna, A. Darus, M. Isahak, S. Kandiben, and D. Koh, Prevalence and associated factors of stress in the Malaysian Police Force, *Preventive Medicine*, **57**, (2013), S57-S59.

[35] M. Yadegarfard, R. Ho, and F. Bahramabadian, Influences on loneliness, depression, sexual-risk behaviour and suicidal ideation among Thai transgender youth, *Culture, Health & Sexuality*, **15**(6), (2013), 726-737.

[36] M. Yadegarfard, M. E. Meinhold-Bergmann, and R. Ho, Family rejection, social isolation, and loneliness as predictors of negative health outcomes (depression, suicidal ideation, and sexual risk behavior) among Thai male-to-female transgender adolescents, *Journal of LGBT Youth*, **11**(4), (2014), 347-363.

[37] T. D. Tran, T. Tran, and J. Fisher, Validation of the depression anxiety stress scales (DASS) 21 as a screening instrument for depression and anxiety in a

rural community-based cohort of northern Vietnamese women, *BMC Psychiatry*, **13**, (2013), 24.

[38] M. A. Idris, M. F. Dollard, and A. H. Winefield, Lay theory explanations of occupational stress: The Malaysian context, *Cross Cultural Management: An International Journal*, **17**(2), (2010), 135-153.

[39] M. Jackson, E. Sztendur, N. Diamond, J. Byles, and D. Bruck, Sleep difficulties and the development of depression and anxiety: a longitudinal study of young Australian women, *Women's Mental Health*, **17**, (2014), 189-198.

[40] A. Kurspahić-Mujčić, F. Hadžagić-Ćatibušić, S. Sivić, and E. Hadžović, Association between high levels of stress and risky behavior, *Medicinski Glasnik*, **11**(2), (2014), 367-372.

[41] F. Stein, Occupational stress, relaxation therapies, exercise and biofeedback, *Work*, **17**, (2001), 235-245.

[42] J. J. Kennedy and M. Pretorius, Integrating a portable biofeedback device into call centre environments to reduce employee stress: Results from two pilot studies, *Journal of Workplace Behavioral Health*, **23**(3), (2008), 295-307.