ORIGINAL ARTICLE

OCCUPATIONAL STRESS AND ITS ASSOCIATED FACTORS AMONG ACADEMICIAN IN A RESEARCH UNIVERSITY, MALAYSIA

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ABSTRACT

The prevalence of occupational stress among academician is increasing in developed and developing countries. The job is not only to teach, but also involve in doing research, publications, consultation and administrative work. This study aims to assess the prevalence of occupational stress among academic staff in a research university and to investigate the association and correlation between stress and job factors which are career development, research, teaching and interpersonal relationship. One research university in Malaysia was selected randomly. A cross-sectional study was conducted and the respondents were recruited by using a randomized stratified sampling method. A total of 380 self-administered and validated Depression, Anxiety and Stress Scale-21 (DASS-21) and Stress Sources Questionnaires (SSQ) were distributed among academic staff between March to May 2012. The statistical analyses used were x^2, independent-t test and Pearson Correlation. Response rate was 81.1%. Stress prevalence was 22.1%. All socio-demographic factors showed no association with stress except ethnic group. Teaching, research and career development had significant association with stress among academic staff (p<0.05). Overall result showed career development, that include university condition and required publications for promotion were the greatest source of stress among the academicians. Occupational stress showed positive linear relationship to career development, research and teaching. There was a fair positive relationship between occupational stress and career development, research and teaching. It is recommended to organize continuous stress assessment program to identify and evaluate the current level of stress at the university level. This data could be a foundation for implementing prevention and control measures to reduce stress in the workplace.

Keywords: academic staff, lecturer, occupational stress, research, teaching, career development, interpersonal relationship, research university, job stress

INTRODUCTION

Occupational stress was the response people may have when presented with work demands and pressures that were not equivalent to their knowledge and abilities, and which challenge their ability to cope[1]. Job stress helps to improve performance up to a limit and then starts deteriorating[2]. Teaching has become a stressful occupation[3]. A stress survey was conducted by the British National Association of Head Educators among head educators, which was done in May 2000 reported that 40% of respondents had visited the doctor for a stress related problem in the previous year, 20% considered they drank too much, 15% believed they were alcoholics and 25% suffered from serious stress related health problems including hypertension, insomnia, depression and gastrointestinal disorders.

The impact of job stress experienced by university employees was highly significant because it may affect not only the educators but also their learners[4]. Research conducted by several universities in Malaysia showed that academic staff faced more pressure from the management due to competitive pressure from other universities[5]. The universities are now competing with each other to get a better rank in achieving an excellent university in the country, and indirectly pressuring the academic staff to speed up their performance in order to reach this ultimate goal.

Academic staff or sometimes refer as lecturer or academician is an employee who work in university with multiple roles (being a teacher, clinician, researcher, student supervisor and even administrator). Due to the change in tertiary education system, the level of stress among academic staff and university management was high and keep on increasing worldwide[6]. In Malaysia, tertiary education is divided into research universities and non-research universities. Research University refers to public university in Malaysia, that emphasize research, besides teaching, field consultation and administrative work. The non-research university refers to public university in Malaysia that consists of focus university (offer specific discipline such as technical, defensive, education and management) and comprehensive university (offer multidisciplinary courses). The differences were research universities were given financial grant by the government for research[7]. Until 2012, there are five research universities in Malaysia competing against each other and struggling hard to maintain their research university

title or their rank. Thus, this will create more stress not only to the university management but also to their academic staff.

Moreover, the National Higher Education Strategic Plan (NHESP) that was enacted in 2007 targeted at least three universities to be listed among the top 100 and one in the top 50 of world renowned universities by 2020. The quantity and quality of research from research university must reach at least 30%, and 10% of these research findings shall be commercialized[7]. Therefore, the promotion for academic staff are based on the outcome of scientific research. In addition to research, an average 10% of overall enrollment consists of international students is one of the main thrust in the NHESP[7]. The expansion of enrollment in universities had resulted the increase amount of students with less proportional to the amount of academic staffs. This contradiction placed a greater teaching burden on academicians. These facts increase the likelihood that academic staffs in Malaysia, particularly from research universities may suffer serious occupational stress.

Female experienced more stress than male was one of our main hypotheses. It was because male and female academic staff perceived work-related stress differently[8]. Student behavior was the greatest source of stress in inter-relationship component and limitation funds was the highest source of stress in the research component[8]. The same study found that career development was one of the stress source to the academic staff. Limited resources and shortage of time, slow progress in career advancement, poor faculty communication, professional disillusion and inadequate salaries were directly related to pressure experienced by academic staff[9]. Heavy work load and publication efforts were also the cause of stress among academic staff[10]. Several studies showed that higher level of stress were reported arising from funding cuts to universities, heavier teaching loads, difficulty in securing research funds, lack of resources, poor relationships with colleagues and unrealistic expectations from management [2,11].

If academic staffs experience too many stress in their work and they failed to manage the stress effectively, this will lead to decreasing productivity and negative impact will later be experienced by their students[12,13]. A review revealed that high proportion of academician has strong desire to leave higher education or regret choosing an academic career[14]. This serious implications not only affect the quality of life for the individuals themselves, but also will affect the quality of higher education as well.

However, to our knowledge, few studies pertaining to prevalence of occupational stress was conducted among academic staff in research university in Malaysia. Those studies explored different stressor factors and our study specifically investigate the stressor factors focusing on career development, research and teaching aspect. Many previous studies in regards to work-related stressors were conducted in western countries, which has different educational system and cultural context with non-western countries. The reason was many East Asia countries have different values, beliefs, norm, attitudes, educational system and technology, and these conditions may raise questions about the universality of western theories whether it can be applied in non-western countries. Therefore, this study aimed to investigate the prevalence of occupational stress and their work-related factors among academic staffs in Malaysia or Asian culture. Hopefully, these findings can be used to guide in planning the preventive measures to reduce the stress related-health problem besides maintaining the quality of higher education in Malaysia, within the Asian region.

METHODOLOGY

A cross-sectional study was conducted among academic staff in one of research university in Malaysia from March 2012 to May 2012. A randomized stratified sampling method was used in selecting the respondents. This study was approved by the Research Ethics Committee of National University of Malaysia (FF-265-2012). Permission to carry out the study was obtained from the Registrar and Deans of that specified university. Self-administered questionnaires were distributed direct to the respondents or sent directly to their room or department. Consent form was included in the questionnaire booklet together with a copy of permission letter from the Registrar and an explanation letter regarding the questionnaires. To maximize the response rate, a written notice and verbal reminder by phone were made to the non-respondents 3 weeks after the initial distribution of the questionnaires.

Study population
One research university was randomly selected. The sample size was estimated by using 'Power and Sample Size Calculation' version 3.0.43. Proportion of stress were taken from the prevalence of stress associated with publication of finished articles (41.0%) and university conditions/provisions for professional development (26.8%) [9,15]. By assuming 10% of non-response rate, sample size was calculated to 380 subjects. Subjects were identified from the lecturer registry obtained from the Administration Department, Registrar and Deans Office. The sample size calculation of each faculty (total 16 faculties) and academic rank (lecturer, senior lecturer, associate professor and professor) were based on proportion. The subjects for each

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academic rank were selected randomly based on a list of employees registration number.

Malaysian education system has adopted a traditional way of dividing the field of knowledge. This reflects the ratio of 60:40 for science and social science academics advocated by the Malaysian government[7]. Therefore, in this study, field of studies were divided into science and social science discipline. For the purpose of this study, Human Ecology, Modern Language and Communication, Economics and Management, Educational Studies and Environmental Studies were categorized as social science, meanwhile, Agriculture, Forestry, Agriculture and Food Science, Medicine and Health Sciences, Veterinary Medicine, Biotechnology and Biomolecular Sciences, Design and Architecture, Computer Sciences and Information Technology, Food Sciences and Technology, Science and Engineering disciplines were included in science field. All permanent academic staff and Malaysian nationality were included in this study. The exclusion criteria were academician who was seconded to the Ministry of Higher Education, trainee lecturer, tutors, lecturers on sabbatical, no pay leave and study leaves. A stratified random sampling method was used to ensure high degree of representatives from all strata or layers in the population, in order to increase the generalizability of the study conclusion[16].

Instruments
The self-administered questionnaires consist of 4 sections, enquiring on socio-demographic factors (4 items), occupational details (5 items), symptoms of stress (using DASS-21: 21 items) and work-related stressors (SSQ: 20 items). All the questions asked in the questionnaires were in English language. Many higher learning institutions in Malaysia using English language in their teaching-learning process. English is a widely spoken language and majority of the academic staffs in Malaysia have well-English proficiency.

DASS-21 is a self-reported instrument which was designed to measure a negative emotional state of depression, anxiety and stress. It consists of 21-items that measure depression, anxiety and stress. It measures the severity of each state experienced over the past one week based on the Likert scale of 0-3 (0 Did not apply to me at all, 1 Applied to me to some degree, or some of the time, 2 Applied to me a considerable degree, or a good part of the time, and 3 Applied to me very much, or most of the time). DASS-21 was the short version from the full version of DASS-42. DASS-21 has good internal reliabilities with Cronbach's alpha of 0.88 for Depression scale, 0.82 for Anxiety scale, 0.90 for Stress scale, and 0.93 for the total scale[17]. Cronbach's alpha for this study population was 0.87

for depression, 0.76 for anxiety, 0.83 for stress and 0.91 for the total scale.

The SSQ was developed by Archibong et al. and it was used with the permission from the author[8]. SSQ was used to assess the extent of stress experienced by participants in four main aspects related to the job namely-interpersonal relationships, research, teaching and career development. Each aspect has 5 items, making a total of 20 items in the SSQ. The items were measured in 4-points Likert scale ranging from "extremely stressful" to "not stressful".

The items were face validated by 2 academic staffs, who are in the measurement and evaluation discipline. The internal consistency of the research instrument was carried out using 20 academic staffs. The Cronbach's alpha ranging from 0.74 – 0.82 for the sub-variables and 0.78 for the entire instrument. The Cronbach's alpha of SSQ for this study population was 0.97 for interpersonal relationship, 0.86 for research, 0.90 for teaching, 0.93 for publication and 0.95 for the total scale.

Since DASS-21 and SSQ were developed in different countries, before distributing those questionnaires, pre-test was done among 10 academic staffs who were not included in the study population. It showed that they can understand the meaning of items in scale without wrong perception. Hence, the instruments were considered adequate and sufficient for our study objectives.

Statistical analysis
Data were analyzed using SPSS version 11.0. DASS-21 measured 3 main items; stress, anxiety and depression. There were 7 sub-items under each main item, making a total of 21 sub-items. Scores for each main item (stress, anxiety and depression) derived by totaling the scores for each sub-item and multiplying by two to ensure consistent interpretation with the longer 42 items-version[18]. Stress level was classified according to the recommended scoring system using cut-off values to classify into the following categories: normal (0-14), mild (15-18), moderate (19-25), severe (26-33) and extremely severe (34+). Same goes to anxiety and depression, followed to the recommended scoring system given.

In this study, we categorized no stress when the score within normal range, and stress if the score fall within mild to extremely severe stress. The categorization used in this study had previously been used in other mental health study[19]. Since the items were measured in a 4-point Likert scale ranging from "never" to "most of the time", the mean score of stress were derived from totaling the 7 sub-items under the main stress item and then further divide by 7. As for the SSQ, not stressful was

categorized as no stress, meanwhile extremely stressful, very stressful and stressful were referred to as stress.

The quantitative variables were tested for normal distribution by skewness-kurtosis and histogram. Frequencies and percentages were calculated for qualitative data and quantitative variables were expressed in mean and standard deviation. Pearson's chi square test (for qualitative variables) and independent t-test (quantitative variables) were used to study the association of stress status and its associated factors. Pearson correlation was used to assess the correlation of two continuous variables. Level of statistical significance was $p<0.05$.

RESULTS

Out of 380 subjects, only 308 returned the questionnaires, with response rate of 81.1%. Table 1 showed majority of the respondents was female (53.2%), Malay (85.7%), married (90.6%) and aged between 30-39 years old (42.2%). The respondents were dominantly senior lecturers (52.6%) and 48.7% had length of service between 5-10 years. The overwhelming majority were from science discipline (77.6%) and PhD holder (85.4%).

The prevalence of stress among academic staff in this research university was 22.1% with mean (SD) stress score was 0.8 (0.5). About 8.1% experienced mild stress, 9.4% moderate and 4.5% with severe stress. Academicians who had anxiety were 52.9%, while depression was 35.4%. As for work-related stressors, the mean (SD) for interpersonal-relationship was 0.77 (0.63). The mean (SD) for research and teaching were 1.21 (0.74) and 0.83 (0.67) respectively. Meanwhile, the mean (SD) for career development was 1.57 (0.83).

Ethnicity and stress showed significant association ($x^2=8.18$, $p=0.004$) as shown in Table 2. Non-Malays (38.6%) were found to experience more stress than Malays (19.3%). Gender and stress status was not significant ($x^2=2.92$, $p=0.087$). It means that there was no significant difference between stress among male and female respondents. Larger sample size may give better result and interpretation. Other socio-demographic variables were not significantly associated with stress (Table 2).

Table 3 showed career development (t=3.04, p=0.003), research (t=2.61, p=0.009) and teaching (t=3.15, p=0.002), but not interpersonal relationship (t=1.67, p=0.097) were significantly associated with stress. Competition in career development (mean 1.84, SD 0.86) was the highest mean, followed by research (mean 1.41, SD 0.75) and teaching (mean 1.08, SD 0.77). All variables in the career development factors had significant association with stress status.

The most stressful factor in career development was university conditions for professional development (mean 2.09, SD 0.94, p=0.001), followed by having the required publication for promotion (mean 2.03, SD 0.85, p=0.039), sourcing funds for career development (mean 1.93, SD 0.89, p=0.032), obtaining the required qualifications (mean 1.62, SD 1.07, p=0.015) and linkage to avenues of professional development (mean 1.51, SD 0.89, p<0.001).

All variables in research factor had significant association with stress status except sourcing for research grant (t=1.86, p=0.064) and publication of finished articles (t=0.49, p=0.628). The most stressful factor in research was conceptualizing research problems (mean 1.29, SD 0.92, p=0.006), linkage to other professionals in research discipline (mean 1.26, SD 0.86, p=0.014) and access to relevant literature (mean 0.85, SD 0.82, p=0.001). As for teaching, the mean of all variables under this factor were significantly higher among stress compared to non-stress respondents.

Development of course content (mean 1.13, SD 0.81, p<0.001) was the most stressful task, followed by collation of results (mean 1.12, SD 0.95, p=0.005), deciding on appropriate method of lesson presentation (mean 1.09, SD 0.89, p<0.001), marking exam script (mean 1.06, SD 0.91, p=0.020) and exam setting (mean 1.00, SD 0.86, p=0.50).

Table 4 showed positive and fair correlation between career development, research and teaching scores with stress score. The highest correlation was teaching (r=0.36; p<0.001), followed by career development and research (r=0.31; p<0.001).

Table 1: Sociodemographic characteristics of the respondents (n=308)

Characteristics	n	%	Mean (SD)
Gender			
Male	144	46.8	
Female	164	53.2	
Age			
20-29	5	1.6	
30-39	130	42.2	
40-49	88	28.6	
50-59	85	27.6	
Ethnicity			
Malay	264	85.7	
Non-Malay	44	14.3	
Marital Status			
Married	279	90.6	
Single	23	7.5	
Widowed/Divorced/Separated	6	1.9	
Academic Rank			
Lecturer	49	15.9	
Senior Lecturer	162	52.6	
Associate Professor	67	21.8	
Professor	30	9.7	
Length of service			
Less than 5 years	59	19.2	
5-10 years	150	48.7	
More than 10 years	99	32.1	
Highest qualification			
Master degree	45	14.6	
PhD	263	85.4	
Field of studies			
Science	239	77.6	
Social Science	69	22.4	
Stress status			
No stress	240	77.9	
Stress	68	22.1	
Anxiety status			
No anxiety	145	47.1	
Anxiety	163	52.9	
Depression status			
No depression	199	64.6	
Depression	109	35.4	
Stress score			0.80 (0.51)
Work-related stressors score			
Interpersonal relationship			0.77 (0.63)
Research			1.21 (0.74)
Teaching			0.83 (0.67)
Career development			1.57 (0.83)

Table 2: Association between stress and socio-demographic factors (n=308)

Socio-demographic factors	Stress n (%)	No stress n (%)	x^2 (chi-square)	p values
Gender				
Male	38 (26.4)	106 (73.6)	2.92	0.087
Female	30 (18.3)	134 (81.7)		
Age				
20-39	35 (25.9)	100 (74.1)	2.08	0.354
40-49	17 (19.3)	71 (80.7)		
50-59	16 (18.8)	69 (81.2)		
Ethnicity				
Malay	51 (19.3)	213 (80.7)	8.18	0.004*
Non-Malay	17 (38.6)	27 (61.4)		
Marital status				
Married	59 (21.1)	220 (78.9)	2.18	0.336
Single	8 (34.8)	15 (65.2)		
Widowed/Divorced/Separated	1 (16.7)	5 (83.3)		
Academic rank				
Lecturer	13 (26.5)	36 (73.5)	0.72	0.870
Senior lecturer	35 (21.6)	127 (78.4)		
Associate professor	14 (20.9)	53 (79.1)		
Professor	6 (6.6)	24 (80.0)		
Length of service as academician				
Less than 5 years	12 (20.3)	47 (79.7)	5.27	0.072
5-10 years	41 (27.3)	109 (72.7)		
More than 10 years	15 (15.2)	84 (84.8)		
Highest qualification				
Master degree	11 (24.4)	34 (75.6)	0.17	0.679
PhD	57 (21.7)	206 (78.3)		
Field of studies				
Science	56 (23.4)	183 (76.6)	1.14	0.287
Social science	12 (17.4)	57 (82.6)		

*Significant at p<0.05

DISCUSSION

Our study demonstrated that 22.1% of academic staffs were stress. This finding was almost similar to a study that was done among medical lecturers in Universiti Sains Malaysia (USM) with prevalence of 23.3%[20]. They used different instrument [Job Content Questionnaire (JCQ)] to study job strain[20]. The same questionnaire (DASS-21) was used to study stress level among lecturers and supportive staff at dental healthcare clinic in USM and they found 22.2% of them were stress[21.] In contrast to our Malaysian findings, academic staff in China experienced a remarkably higher stress (91.0%) with Personal Strain Questionnaire (PSQ)[22]. In Nigeria, the prevalence of stress among their academic staff was 75.8% [23] and in Bostwana was 81.0% [24]. These studies finding showed that each country have different education system and culture that may give different perception to the work-related stressor[25].

Table 3 Association between stress and work-related stressors (n=308)

Factors of work-related stressors	Stress (n = 68) Mean (SD)	No stress (n = 240) Mean (SD)	t (t-test)	p values
Interpersonal relationship	0.86 (0.44)	0.75 (0.68)	1.67	0.097
Career development	1.84 (0.86)	1.49 (0.81)	3.04	0.003*
University conditions/provisions for professional development	2.09 (0.94)	1.67 (0.94)	3.26	0.001*
Having the required publication for promotion	2.03 (0.85)	1.79 (0.83)	2.07	0.039*
Sourcing funds for career development	1.93 (0.89)	1.65 (1.00)	2.17	0.032*
Obtaining the required qualifications	1.62 (1.07)	1.26 (1.06)	2.44	0.015*
Linkage to avenues of professional development	1.51 (0.89)	1.09 (0.77)	3.90	<0.001*
Research	1.41 (0.75)	1.15 (0.73)	2.61	0.009*
Sourcing for research grant	1.90 (1.02)	1.63 (1.03)	1.86	0.064
Publication of finished articles	1.75 (0.98)	1.68 (1.01)	0.49	0.628
Conceptualizing research problems	1.29 (0.92)	0.95 (0.90)	2.75	0.006*
Linkage to other professionals in my research discipline	1.26 (0.86)	0.95 (0.93)	2.48	0.014*
Access to relevant literature	0.85 (0.82)	0.52 (0.70)	3.34	0.001*
Teaching	1.08 (0.77)	0.76 (0.61)	3.15	0.002*
Development of course content	1.13 (0.81)	0.73 (0.72)	3.95	<0.001*
Collation of results	1.12 (0.95)	0.80 (0.72)	2.85	0.005*
Deciding on appropriate method of lesson presentation	1.09 (0.89)	0.76 (0.78)	3.62	<0.001*
Marking of exam script	1.06 (0.91)	0.71 (0.72)	2.34	0.020*
Exam setting	1.00 (0.86)	0.80 (0.79)	1.94	0.050*

Significant at p<0.05; SD: Standard deviation

No difference was found between stress status among female and male. This finding could be attributed to the fact that individuals have different ways of adjustment with different coping styles. Personality traits that cut across gender might be responsible for no significant difference in occupational stress experienced by female and male. However, a meta-analysis of the relationship between gender and burnout using 409 effect sizes from 183 studies found that female employees tend to experience burnout more than male employees[26]. Their findings showed that women are slightly more emotionally exhausted than men, while men are somewhat more depersonalized than women[26].

Our study found that non-Malays were more stressful compared to Malays. It was not clear why this occurred and based on our knowledge and from literature search, no one had studied this issue in Malaysia. Previous study demonstrated the way how this ethnic perceived work and work stress in different ways suggest different expectations and response styles in coping the stressors[27].

In this study, the most stressful work-related stressor was career development, closely followed by research and teaching. Career development was defined as a rise in academic rank and consequently increases their salaries, and the benefits hinges on an academician's research productivity[8]. Hence,

research attracts the highest consideration for promotion in Malaysian research public universities. Doing research was financially costly and time consuming. Some academician had to spend outside office hour to do their research. The long-hours of working time had caused academic staff to feel stressed out[28,29]. Teaching was ranked last as it has been a routine activity carried out by an academic staff.

Table 4 Correlation between stress score and work related stressors score (n=308)

Variables	Pearson correlation, r	p values
Teaching	0.36	<0.001*
Research	0.31	<0.001*
Career development	0.31	<0.001*

*Pearson correlation is significant at p<0.01

Career development was the major source of stress among academic staff. The most stressful indices arising from career development was the university conditions or provisions for professional development. The non-congruence between the expectations of the university and the academic staff has often resulted in delayed career development path, lack of social support and poor work environment[23]. Higher level of stress was reported arising from unrealistic expectations from the university management [11].

The next occupational stress in career development was having the required publication for promotion. This study found that publication only was not associated with stress, but when publication combined with promotion, most respondents perceived stressful events in their career. Every academic staff aspires to grow on the job to the rank of professor. This aspiration itself is stress inducing, and to achieve this, academic staff has to fulfill certain criteria like the number of publications they have to produce every year in order to be promoted to a higher academic rank[8].

Sourcing funds for career development and obtaining the required qualifications were both acting synergistically. When the staff had problem in getting financial support such as scholarship or education loan to further their studies, this may affect in obtaining the required qualification, thus may delay the promotion in their career development. This scenario applied in Malaysia, whereby through the NHESP, the target was at least 75% of the lecturers in the institutions of Higher Education were PhD holders[7]. Therefore, to get a better career development pathway, academicians must possess PhD certification to get promoted to a higher academic rank. The least stress component in career development was linkage to avenues of professional development. The reason being that the procedure and channel for career development was clearly stated and every staff had equal opportunities for career advancement if all conditions stated above were fulfilled. Transparency is also essential because injustice in the organization can cause the lecturers to feel very depressed [30].

The major stress source to academic staff with respect to research was conceptualizing research problems, followed by linkage to other professionals in their research discipline. These findings were similar to a study done by Archibong et al. among academic staff in Nigeria[8]. These two sources of stress were closely linked; if the academic staff interacted with peers in the same professional field, then the stress of conceptualizing research problems will likely abate. The stress source from access to relevant literature was rather low. This could be attributed to the ICT era and improvement of the staff access to internet facilities.

In respect to stress emanating from teaching, academic staff experienced stress mainly from development of course content, followed by collation of results, deciding on appropriate method of lesson presentation, marking the exam script and finally exam setting. One of the Malaysian thrust in the NHES Plan was to increase number of student enrollment in university. This had led to increase workload in collation of results and marking examination scripts. Increased enrollment produced increase workload which may increase the probability of academician working under tight deadlines and needing more help[22]. The repeat courses or carry over courses of problematic students made result compilation hectic. These had increased the academic staff workload.

This study also showed that stress increase aligned with heavier research and teaching load[11]. Ahsan, et al. identified several stress inducing factors in academic staff, that were work overload, role ambiguity and performance pressure[31]. Role overload, role insufficiency and lack of research finance have been reported to strongly affect occupational stress among academic staff in universities[32].

Strength and Limitation of the study

This study will generate baseline data which could be of value to policy and decision makers, and to university administrators and other professional associations in the higher education sector. Few limitations were encountered in this study. This study was limited by its cross sectional design that cannot prove causal relationship between occupational stress and the factors. Second, in view of the first attempt, our attentions was to focus on clarifying the related factors. The pathway of risk factors acting on occupational stress was not examined. Thirdly, we did not study family-related and other stressors that can contribute to stress in the participants. Coping skills were also not included and these factors should be included in future studies. Fourth, socio-demographic distribution in this study was nearly homogenous, whereby majority of the ethnic were Malays and PhD holders, causing the socio-demographic factors neutralizing the stress status. This has resulted in socio-demographic relationship with stress cannot be seen.

Fifth, this study included only one research university, thus, this may have limited generalizability. Future studies should include wider array of settings (e.g. years of university establishment, research emphasis, and public or private university) and to consider larger sample size in order to increase the generalizability of the findings. Gender and race factor should be interpreted with caution due to small sample size. Besides, the instrument used in this study, DASS-21 questionnaire may lead to recall bias since the questions asked about symptoms experienced over the past 1 week.

Recommendations

All findings obtained in the present study need to be confirmed in future prospective studies by using longitudinal study design such as 2-wave panel to establish cause-effect relationship. Furthermore, the accuracy of the research results should be checked by other methods in addition to surveys (interviews, observations, etc.) and qualitative methods should be used to interpret the results in more detail.

Further study to explore association between anxiety and depression with work-related factors were recommended. A good and reliable instrument tools to measure work-related anxiety and depression should be developed and used in further study. Besides that, it is also recommended that university management should develop a comprehensive stress management strategy and programs to reduce an occupational stress and to improve the quality of life of academicians. After the intervention program has been conducted in the

workplace, a follow-up study should be performed again on the same population sample to assess the stress level and to make comparison to evaluate the effectiveness of the programs. If the same results were obtained, the management should investigate the cause of problems. Stress management workshop should be organized to develop good coping skill among academic staff and to increase their capability to manage stressful working situation in efficient ways. All these recommendations should be conducted with consistency and comprehensive in order to see a continuous effect.

CONCLUSIONS

To our knowledge, our study is the first to use the SSQ in studying the stress level among academic staff in Malaysia, within this Asian region. The prevalence of stress among academic staff was 22.1%. Factors that contribute to stress among academic staff were career development, research and teaching with fair positive relationship between occupational stress and each factors. Findings in this study could be used to set up a proper and effective stress management and intervention program at the university level.

ACKNOWLEDGEMENTS

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