**ACADEMIA**
*ISSN, 2241-1402*
http://hepnet.upatras.gr

*Number 23-24, 2021*

Academia A publication of the Higher Education Policy Network

# Stress among University Staff. Is Working in Suburban Campus Better?

Razali Salmi[1], Mat Nazali Mohd Izwan[2], Hashim Nurul Azreen[3] & Mohd Nawawi Hapizah[4]

Universiti Teknologi MARA

**Abstract**
*Stress among university staff may hinder academic success. However, a comprehensive investigation of its contributing factors is still limited. Hence, this study aimed to determine the prevalence of stress among university staff and identify contributing factors for stress among them. The staff who consented from a selected university were assessed using validated questionnaires to measure the level of stress, sociodemographic, personal, and job-related factors. A total of 276 staff (Mean ± SD age: 38.84 ± 7.85 years; 44.2% males) participated in the study. There were 43(15.5%) staff who experienced stress, and the remaining had no stress (233; 83.8%). Significant associated factors include campus location, work responsibility, problem with client or student and feeling dissatisfied with superior. Multiple logistic regressions indicated that campus location and work responsibility were significant predictors of stress. Staff working in the urban campus have almost three times the odds of having stress. Having less responsibility is a protective factor for stress. University authorities should provide a healthy work environment, stress-relieving amenities, and counselling for stress management to ensure university staff excel in both academia and wellbeing.*

**Keywords**
*Stress, university, campus, education, work responsibility.*

[1] Department of Psychiatry, Faculty of Medicine, drsalmi@uitm.edu.my.
[2] Department of Psychiatry, Faculty of Medicine, dr.izwan.pro@gmail.com.
[3] Department of Psychiatry, Faculty of Medicine, azreen@uitm.edu.my.
[4] Institute for Pathology, Laboratory, and Forensic Medicine (I-PPerForM), hapizah@uitm.edu.my.

## Introduction

Stress among staff working in a university is hazardous, leading to burnout and mental illness, which results in inefficient work performance, poor academic achievement and reduced quality of life of both the staff and the students (Razali, Yung-An, Nazali, & Nawawi, 2019a, 2019b). The lecturers function as the main backbone of the routine academic tasks that ensure the students receive the highest academic achievement and scholarly accomplishment. It is imperative to safeguard the wellbeing of university staff so that their personal, physical and mental health are taken care of, apart from their efficient academic performance. Hence, this study aims to improve the knowledge gap of the issues of stress among university staff. This article examines the differences in the level of stress between university staff working in urban and suburban campuses and explores the contributing factors of stress among university staff including sociodemographic factors, personal factors, family problems and job-related factors.

## Literature Review

Stress is a complex condition that triggers a cascade of physiological, psychological, and cognitive changes. While minimum stress serves as motivation to an individual to work harder, prolonged, or severe stress (called distress) has harmful and damaging effects on various aspects of life. George Engel (1971) in his paper, "Sudden and Rapid Death During Psychological Stress: Folklore or Folkwisdom" proposed the biopsychosocial theory that the source of stress came from various aspects including biological (such as physical illness and genetic condition), psychological aspect (such as emotional and cognitive aspects) and social aspects (such as life events and work condition). Focusing on the work environment, disruption in the dynamic of interaction between job demand, control, and support may contribute to stress among workers (Karasek Jr, 1979; Karasek, Triantis, & Chaudhry, 1982). In universities, while work demand is part of social aspects that may contribute to overall stress among the staff, applying biopsychosocial theory to the genesis of stress, the roles of issues unrelated to work such as personal problems, family issues, and the environment cannot be disregarded.

Several studies have reported high levels of stress among staff working in universities (Charlier & Williams, 2011; Tai, Ng, & Lim, 2019). While causes of stress are multifactorial, prolonged stress among university staff can lead to multiple consequences physically, mentally, and socially. Stress leads to hypertension,

cardiovascular disease, musculoskeletal pain, and various other chronic diseases (Tai et al., 2019). Stress may lead to burnout, which can diminish job satisfaction and work performance (Khalid, Ali, & Mohamed Makhbul, 2019). For academicians, stress could reduce interaction between lecturers and students, impaired learning motivation and minimized lecturers' effectiveness in meeting learning objectives, which could lead to obstacles in achieving excellence in academia (Khalid et al., 2019). Stress can also create a dysfunctional dynamic in the relationship between lecturers and students, and precipitates mental and physical illness, as well as the overall quality of teaching and learning activities. Several studies have highlighted the presence of mental illness among university staff. In Malaysia, recent studies investigating depression among university staff indicated about 15% to 28% of their studied participants may have depression (Fasoro, 2018; Razali et al., 2019a). Apart from depression, anxiety disorder has also been documented to commonly occur among university staff (Khalilzadeh, Khalkhali, & Yavarian, 2005; Loveday, 2018; Razali et al., 2019b). While academicians play the key roles providing services in universities, the function of the administrative counterpart is crucial to ensure the effectiveness and efficiency of the services in an academic institution and the organization. Hence, investigating and addressing stress among them is equally important.

Experts and professionals are continuously debating on the quality of living in urban, suburban and rural areas (Flynn, McDonald, D'Alonzo, Tam, & Wiebe, 2018; Khayat et al., 2017; Zuberi, Ivemark, & Ptashnick, 2018). Urban areas may be better in terms of commercials activities, modern amenities, efficient transportation and facilities for education and health services. On the other hand, rural and suburban areas may provide a healthier environment with less pollution, spacious living areas, less hectic work environment and more quality time with family (Charlier & Williams, 2011; Harder, 2010; Shahijan, Rezaei, & Preece, 2016). In terms of the university setting, several studies have indicated the benefits and disadvantages of working in a different campus environment. Together with personal and job factors, work environment plays a significant role in the genesis of stress in universities. Urban, suburban and rural campuses may provide different levels of job demand and control, levels of work resources and facilities, an opportunity for internationalization, exposure to socio-cultural diversities and community engagement (Charlier & Williams, 2011; Harder, 2010; Shahijan et al., 2016). Furthermore, in order to ensure excellence in academia while

reducing stress and optimizing the quality of life of staff, structural inequalities between different campus locations in universities have to be minimized (Naylor & Mifsud, 2019).

University is not merely students and lecturers. It is an organization of various levels and types of resources from students to lecturers; from clerk to chancellor, and gardeners to librarians and many others. Many researchers often focused on academic staff when researching stress in the university (Fasoro, 2018; January et al., 2018; Watts & Robertson, 2011). Similarly, in Malaysia, several local researchers have investigated stress among staff in universities; however, most have focused mainly on academicians without investigating the non-academic, administrative, and support staff. Moreover, little is known regarding the contributions of personal, family matters, and environment on stress among them (Ahsan, Abdullah, Fie, & Alam, 2009; A. Ismail, Yao, & Yunus, 2009; Noordin & Jusoff, 2009; Tai et al., 2019). Specifically, no study has investigated whether the campus location could be a contributing factor to stress or not. Hence, the main objective of this study was to determine the prevalence and level of stress among university staff working at the suburban and urban campuses. We also aimed to identify the associations between stress and the possible contributing factors for stress i) sociodemographic background (gender, age, marital status, education and total household income), ii) personal factors (physical illness, personal problem and family problem) and, iii) job factors (campus location, job category, duration of current service, history of work promotion, level of work responsibility, presence of a problem with client/students, feeling of dissatisfied with superior, conflict with a workmate and inadequate workplace facilities). Finally, we aimed to determine the predictors for stress among the university's staff.

## Methods and Material

### *Study Design*

This was a cross-sectional study that investigated the associations between stress and the possible contributing factors for stress, including sociodemographic, personal and job factors, including the location of the campus of the participants.

### *Sample Size and Sampling Strategy*

The staff of a selected university from different campus settings, urban campuses, and suburban campuses were selected to participate in the study. The sample size was

calculated using the single proportion formula with 5% precision and a 95% confidence interval. The population (N) of the studied university was about 17,706 staff who provide services for 160,000 students. The proportion (P) was estimated based on a study by Mukosolu, Ibrahim, Rampal, and Ibrahim (2015), which showed that 21.8% of staff in one of the universities in Malaysia had stress. The calculated required sample size was 255. By taking into consideration an additional 10% of participant refusal and non-eligibility rates, this study aimed to approach 280 participants. Below is the formula of the sample size calculation (Daniel, 1999): n = N*X / (X + N – 1), where, X = Zα/22 -*p*(1-p) / $MOE^2$, Zα/2 is the critical value of the normal distribution at α/2 (e.g. for a confidence level of 95%, α is 0.05, and the critical value is 1.96) and MOE is the margin of error.

***Recruitment Process***

Data were gathered during a series of health screenings for cardiovascular and chronic diseases which were carried out in the selected campuses in urban and suburban campuses of the university. Staff who came for the screening were given study information sheets. Those who fulfilled the selection criteria and gave informed consent were enrolled in the study. They were given questionnaires to fill in at the end of the health screening process.

***Selection Criteria***

We included only participants aged 21 years old and above, able to speak in Bahasa Malaysia or English, working as full-time staff in the university, and able to give inform consent for the participation. Those who were pursuing studies and working part-time were excluded from participation.

***Data Sources and Measurement Tools***

The term 'urban' campus follows the definition of an urban area by population and housing census provided by the Department of Statistics Malaysia (2019). Potential participants who gave written informed consent were assessed using self-report Pro-forma questionnaires to measure their sociodemographic factors (gender, age, marital status, educational level, level of income), personal factors (personal problem, physical illness, and family problem and job-related factors (campus setting, job category, duration of service, work promotion, work responsibility, problem with clients or students, level

of satisfaction with the superior, conflict with the workmate and condition of work facilities).

The level of stress was measured using the stress subscales of the English or the Bahasa Malaysia Version of Depression, Anxiety, Stress Scale (BM-DASS-21 item). We considered "no stress" when the participants were scored as normal and having mild stress according to the questionnaire and "stress" when they had moderate (cutoff score 19-25), severe (cutoff score 26-33), and extremely severe stress (cutoff score >34). In the stress subscales, seven questions had been translated from the original English version including, " I found it hard to wind down", "I found it difficult to work up the initiative to do things", "I felt that I was using a lot of nervous energy", "I found myself getting agitated", "I found it difficult to relax", "I was intolerant of anything that kept me from getting on with what I was doing", and "I felt that I was rather touchy". The BM-DASS-21 is a self-report questionnaire that has good internal reliabilities with Cronbach's alpha of 0.79 for Stress subscale (Musa, Fadzil, & Zain, 2007). It has been used in many studies of academic staff in this country (Mukhtar & Oei, 2011; Noor & Ismail, 2016).

**Statistical Analysis**

The data in this study were analyzed using the Statistical Package for Social Sciences (SPSS) version 25.0 (IBM). Variables were described as mean ± standard deviation (±SD) for continuous data and number (n) and percentage (%) for dichotomous or nominal data. The factors associated with stress were analyzed by simple logistic regression (SLogR) followed by multiple logistic regression (MLogR) as the data consisted of categorical variables. The sociodemographic factors (gender, age, marital status, educational level, level of income), personal factors (personal problem, physical illness, and family problem and job-related factors (campus setting, job category, duration of service, work promotion, work responsibility, the problem with clients or students, level of satisfaction with the superior, conflict with the workmate and condition of work facilities) were the independent variables entered into the SLogR. Variables with a *p*-value of less than 0.05 from the SLogR were then included in the MLogR analysis. Model fitness was checked using the Hosmer-Lemeshow goodness of fit test. Confounders were adjusted; interactions, multicollinearity, and assumptions were also checked.

### *Ethical Consideration*

This study has been approved by the research committee of our faculty and the Institutional Ethics Committee of the studied university; reference number 600-IRMI-5/1/6-REC/398/18. Only participants who gave informed consent participated in the study. All participants who were found to have very severe stress during the interview were offered a referral to see a counsellor for further management of their stress.

## Results

### *Background of Participants*

A total of 280 staff of a selected university were approached; however, four refused to participate. Hence, only 276 staff participated in the study. Table 1 presents sociodemographic background information of the study participants. They were mostly female (154; 55.8%), aged less than 45 years (224; 81.1%) and married (228; 82.6%). About two-thirds (196; 71%) of the participants had at least tertiary education, and the majority (194; 70.3%) had a total household income of more than RM5000 per month. About one-third of the participants were working at the suburban campus (102; 37.0%) and the remaining working at the urban campuses (174; 63.0%). About two-thirds of them were support staff of general workers (180; 65.2%), and others were among the higher job tier (96; 34.8%).

Table 1

*Sociodemographic background of the participants*

| **Sociodemographic background** | n (%) |
|---|---|
| **Gender** | |
| • Male | 122 (44.2) |
| • Female | 154 (55.8) |
| **Age** | |
| • <45 years | 224 (81.2) |
| • ≥45 years | 51(18.8) |
| **Marital Status** | |
| • Single/Divorced/Widow | 48(17.4) |
| • Married | 228(82.6) |
| **Education** | |
| • Primary & Secondary | 80(29.0) |
| • Tertiary | 196(71.0) |

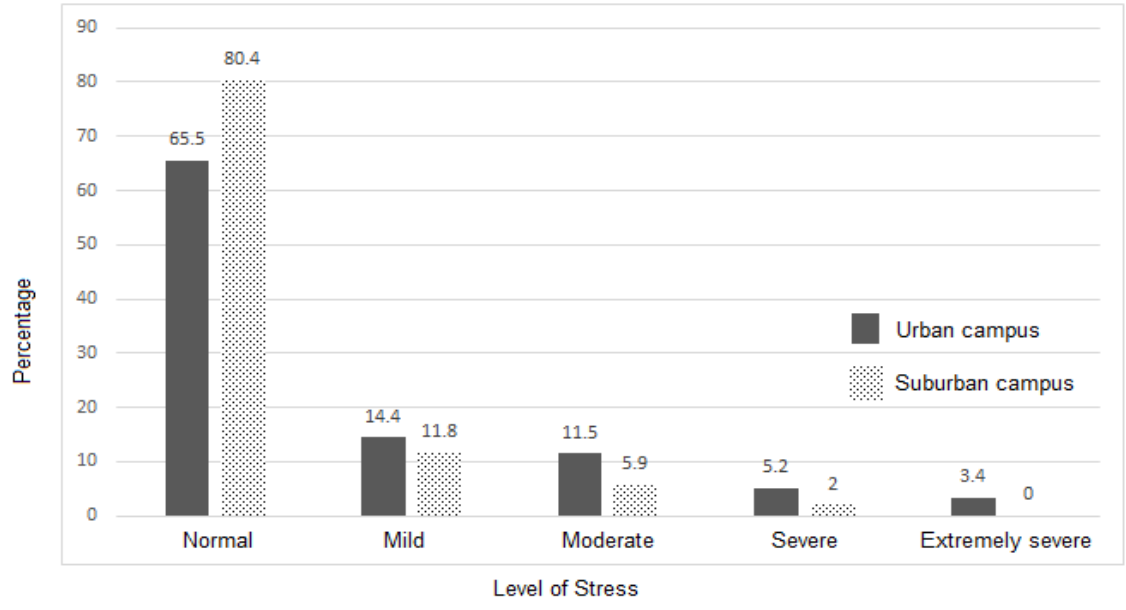
| | |
|---|---|
| **Total Household Income** | |
| • <RM5000 | 22 (8.0) |
| • ≥RM5000 | 194 (92.0) |
| **Campus Location** | |
| • Suburban | 102 (37.0) |
| • Urban | 174 (63.0) |
| **Job category** | |
| • Premier, professional & management | 96 (34.8) |
| • Support & general workers | 180(65.2) |

### *Stress and Campus Location*

Of the total 276 participants, 43(15.5%) were experiencing stress (moderate, severe, and extremely severe stress), and the remaining 233(83.8%) had no stress (normal and mild stress). Figure 1 below shows the different levels of stress between staff in urban and suburban campuses of the university.

Figure 1

*Percentages of different levels of stress in relation to campus locations.*




### *Stress and the Possible Contributing Factors*

Table 2 shows the differences between staff with stress and no stress. There was no difference in terms of sociodemographic and personal factors between staff who were

stressed and those who had no stress. Job factors which were significantly different between staff who were stressed and those who had no stress include; i) campus location ($\chi^2$=7.363, *df* = 1, *p*=0.007), work responsibility ($\chi^2$=10.440, *df=1*, *p*=0.001), ii) problem with client or student ($\chi^2$=5.192, *df=1*, *p*=0.023), and iii) feeling dissatisfied with superior ($\chi^2$=8.166, *df =1, p*=0.004). Simple logistic regressions also indicated that work responsibility, the problem with client or student, and feeling dissatisfied with superior as statistically significant.

Table 2

*Differences between staff with stress and no stress*

| Characteristics | No Stress (n=233) | Stress (n=43) | $\chi^2$ | P-value |
|---|---|---|---|---|
| **Sociodemography** | | | | |
| **Gender** | | | | |
| Male | 106(45.5%) | 16(37.2%) | 1.010 | 0.315 |
| Female | 127(54.5%) | 27(62.8%) | | |
| **Age** | | | | |
| <45 years | 193(82.8%) | 31(72.1%) | 2.957 | 0.091 |
| >45 years | 39(17.2%) | 12(27.59%) | | |
| **Marital Status** | | | | |
| Single/Divorce/ Widow | 41(20.8%) | 7(16.3%) | 0.024 | 0.878 |
| Married | 192(79.2%) | 36(83.7%) | | |
| **Education** | | | | |

| Characteristics | No Stress (n=233) | Stress (n=43) | $\chi^2$ | P-value |
|---|---|---|---|---|
| **Job Factors** | | | | |
| **Campus Location** | | | | |
| Suburban | 94(40.3%) | 8(18.6%) | 7.363 | **0.007*** |
| Urban | 139(59.7%) | 35(81.4%) | | |
| **Job category** | | | | |
| Premier, professional & management | 83(35.6%) | 13(30.2%) | 2.360 | 0.124 |
| Support & general workers | 150(64.4%) | 30(69.8%) | | |
| **Duration of current service** | | | | |
| <10 years | 161(69.1%) | 29(67.4%) | 0.046 | 0.859 |
| >10 years | 72(30.9%) | 14(32.5%) | | |
| **Work promotion** | | | | |

| | | | | |
|---|---|---|---|---|
| Primary & Secondary | 65(81.0%) | 15(19.0%) | 0.944 | 0.331 |
| Tertiary | 168(85.7%) | 28(14.3%) | | |
| **Total Household Income** | | | | |
| <RM5000 | 6(27.9%) | 16(37.2%) | 1.372 | 0.242 |
| >RM5000 | 167(72.1%) | 27(62.8%) | | |
| **Personal Factors** | | | | |
| **Physical Illness** | | | | |
| Yes | 7(22.7%) | 11(25.6%) | 0.164 | 0.686 |
| No | 180(77.3%) | 32(74.4%) | | |
| **Personal problem** | | | | |
| Yes | 57(22.7%) | 11(25.6%) | 0.024 | 0.876 |
| No | 176(77.3%) | 32(74.4%) | | |
| **Family problem** | | | | |
| Yes | 28(12.0%) | 7(16.3%) | 0.595 | 0.440 |
| Yes | 147(63.1%) | 26(60.5%) | 0.107 | 0.744 |
| No | 86(36.9%) | 17(39.5%) | | |
| **Work responsibility** | | | | |
| High | 177(76.0%) | 42(97.7%) | 10.440 | **0.001**** |
| Low | 56(24.0%) | 1(2.3%) | | |
| **Problem with students** | | | | |
| Yes | 148(63.5%) | 35(81.4%) | 8.166 | **0.023*** |
| No | 85(36.5%) | 8(18.6%) | | |
| **Dissatisfied with superior** | | | | |
| Yes | 136(58.4%) | 35(81.4%) | 0.798 | **0.004**** |
| No | 97(41.6%) | 8(18.6%) | | |
| **Conflict with workmate** | | | | |
| Yes | 64(27.5%) | 9(20.9%) | 0.798 | 0.372 |
| No | 169(72.5%) | 34(79.1%) | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | **Inadequate workplace facilities** | | | |
| No | 205(88.0%) | 36(83.7%) | Yes | 190(81.5%) | 38(88.4%) | 2.416 | 0.120 |
| | | | No | 43(18.5%) | 5(11.6%) | | |

*Note:* *p<0.05; $\chi^2$ = Pearson Chi-Squared Test**.**

**Predictors for Stress**

Table 3 shows the factors contributing to stress. In keeping with the Chi-Squared test, the simple logistic regression (SlogR) indicates that significant possible contributing factors were campus setting, work responsibility, the problem with client or student, and feeling dissatisfied with superior. We included all the significant dependent variables ($p$<0.05) in SlogR to develop a model for stress using multiple logistic regressions (MlogR). The strongest predictor for stress was campus location [AOR=2.669; $p$=0.021; 95%CI=1.162-6.129]; staff who worked in the urban campus had about 2.67 odds of becoming stressed compared to those working in suburban campus. Work responsibility was also another significant predictor; however, the odds were very low and less than 1 indicating less work responsibility was a protective factor [AOR=0.106; $p$=0.03; 95%CI=0.014-0.802]. The model was significant indicated by the Omnibus Test ($\chi^2$=25.936, df=4, $p$=0.000); Nagelkerke $R^2$ Square equals to 0.155; Cox & Snell $R^2$ equals to 0.090, and Hosmer & Lemeshow equal to 0.339.

Table 3

*Factors contributing to stress*

| **Predictors** | **Simple logistic regression** | | | | | **Multiple logistic regression** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **B** | **OR** | **P-value** | **95%CI** | | **Adj B** | **Adj OR** | **P-value** | **95% CI** | |
| Campus setting | 1.085 | 2.959 | 0.009 | 1.314 | 6.660 | 0.982 | 2.669 | 0.021 | 1.162 | 6.129 |
| Work responsibility | -2.587 | 0.110 | 0.075 | 0.010 | 0.559 | -2.245 | 0.106 | 0.030 | 0.014 | 0.802 |
| Problem with client/students | -0.921 | 0.398 | 0.026 | 0.177 | 0.897 | -0.245 | 0.783 | 0.691 | 0.234 | 2.620 |
| Dissatisfied with superior | -1.357 | -1.138 | 0.006 | 0.142 | 0.721 | -0.760 | 0.467 | 0.216 | 0.140 | 1.561 |

*Note:* Omnibus Test ($\chi^2$=25.936, df=4, $p$=0.000); Nagelkerke $R^2$ =0.155; Cox & Snell $R^2$=0.090; Hosmer & Lemeshow = 0.339; Specificity = 100%. Percentage correct = 84.4%

**Discussion**

This study found that campus location was the main contributing factor for stress among the selected university staff. In contrast to staff in the urban campus, a larger proportion of which had tertiary education, earned more and occupied a more high-tier job, we found that staff working on the suburban campus were less likely to complain of personal problems and to feel stressed. While the success of some universities relies on the financial resources (Song, 2019), this study highlights that job status and income, which reflect the pecuniary gain, may not always provide a benefit or positive outcome. Our study contradicted the popular belief and findings which suggested financial status (income, job status and length of services) correlated with job satisfaction (Azizah, Rozainee, Nada, & Norhafizah, 2016; Damij, Levnajić, Skrt, & Suklan, 2015; Mustapha, 2013). Similarly, in the United Kingdom, a study of fourteen universities in that country indicated that financial status or high salary alone might not ensure staff are free from stress. However, the concerted factors including work-life balance, work relationships, job security, resources, and communication with authorities, did contribute to stress (Tytherleigh, Jacobs, Webb, Ricketts, & Cooper, 2007). Perhaps, living in a suburban environment that permitted the right work-life balance, despite having low income and a low job position allowed the staff in this study to manage work responsibility and personal matter effectively. It seems that pecuniary gain is not the main agenda of staff living in suburban campuses.

In the present study, we also observed that factors related to job demand, including high work responsibility, problem with the student, and feeling dissatisfied with superior, contribute to stress. Our study supported findings of earlier local research emphasizing the importance of job demand as one of the contributors for stress among staff in university (Ismail, Rahman, & Abidin, 2014; Mukosolu et al., 2015). Elsewhere, other studies have also highlighted the problematic relationships with students as one of the causes of stress among university lecturers (Eagan et al., 2014; Kinman, 1998). The challenges might occur due to the growing number of students in most universities which causes stress to lecturers to give individual attention (Thorsen, 1996). Apart from that, students have become more diverse in terms of performance and background and have higher expectations from staff, which require more time and skills to deal with them (Gillespie et al., 2001). Other sources of conflict could be due to grading policies

(Gmelch, 1993) and the negative attitude of the students who missed classes and failed to submit assignments (Knepp, 2012).

Furthermore, dissatisfaction with superior has also been shown to contribute to stress. These findings were also supported by other studies (Van Thanh, 2016; Winefield et al., 2003). The staffs became frustrated due to poor leadership and management at both departmental and senior levels. These issues included a lack of consultation and staff input, a lack of transparency in management, organizational change, and poor communication between members in the organization. In contrast, support from coworkers and management, recognition and achievement, high morale, and flexible working conditions were essential moderators which helped staff to cope with work-related stress (Gillespie, Walsh, Winefield, Dua, & Stough, 2001).

Interestingly, we found no significant contribution to the stress of the participants from factors related to job control (such as job tier and promotion). In other words, lack of power did not contribute to staff stress that much in our studied university. Our findings did not support the results of other local studies by Manaf et al. (2016) and Razali et al. (2019b), which suggested that low decision latitude is one of the crucial predictors for the complication of severe stress, i.e. anxiety and depression among the participants in their study. By taking all our findings into account, our study supported only part of the popular theory on job stress (Karasek Jr, 1979; Karasek et al., 1982). According to Tai et al. (2019), additional factors that contribute to stress among educators should be taken into consideration, such as career development, psychological skills (such as coping skills, emotional intelligence, self-concept), and interpersonal relationships.

## Conclusion and Recommendations

This study highlights a rarely studied factor, which is campus location, as a contributing factor for stress among university staff. Apart from that, other important factors associated with stress are related to job demands such as high work responsibility, problem with student, and feeling dissatisfied with superior. It is crucial for administrators in universities to identify these factors and then plan appropriate stress interventions for staff. Providing amenities for stress management, leisure activities, green environment and counselling for the staff (particularly in urban campuses) should be part of the intervention and strategy of university management aside from academic achievement. This is to prevent severe implications of stress, which may result in deterioration of

physical and psychological health followed by poor job performance, eventually affecting student outcomes. Nonetheless, the results of this study must be interpreted with several considerations in mind. First, this study was conducted predominantly among the Malay staff of a selected university, which does not accurately represent the diversity of settings of universities in Malaysia. Second, this study was a cross-sectional study that evaluated stress at one time, which could not reflect stress that often occurs longitudinally. We are also aware that the number of staff working in suburban and urban areas was disproportionate and not stratified according to the actual ratio of staff working on these campuses. It is recommended that future research includes a better distribution of staff and more extensive prospective study to determine the causes of stress among the university staff. Further research, for example, using the qualitative approach is required to explore this topic in more detail. Lastly, we recognize the contribution of other theories related to stress (such as response-based stress theory, general adaptation theory, transactional model of stress and many others) and the duration of stress could determine its severity and factors contributing to it. Hence, we would like to suggest a more robust, comprehensive and prospective study that could examine these matters.

## Acknowledgement

This study was funded by UiTM BESTARI Grant [600-IRMI/DANA 5/3/BESTARI (KY) (001/2018)] awarded to the corresponding and first authors. We would like to express our appreciation to all study participants who volunteered to participate in this study and all agencies, staff, and postgraduate students who contributed to the Health Screening Programs.

## References

Ahsan, N., Abdullah, Z., Fie, D. Y. G., & Alam, S. S. (2009). A study of job stress on job satisfaction among university staff in Malaysia: Empirical study. *European journal of social sciences,* 8(1): 121-131.

Azizah, A., Rozainee, K., Nada, I., & Norhafizah, Z. (2016). The Prevalence of Occupational Stress and Its Association With Socio-Demographic Factors Among

Lecturers in a Private University in Malaysia. *International Journal of Public Health and Clinical Sciences,* 3(4): 63-71

Charlier, H. D., & Williams, M. R. (2011). The reliance on and demand for adjunct faculty members in America's rural, suburban, and urban community colleges. *Community College Review,* 39(2): 160-180.

Damij, N., Levnajić, Z., Skrt, V. R., & Suklan, J. (2015). What motivates us for work? Intricate web of factors beyond money and prestige. *PloS one,* 10(7):1-13 https://doi.org/10.1371/journal.pone.0132641

Daniel, W. (1999). Biostatistics: A Foundation for Analysis in the Health Sciences. 7th edition. New York: John Wiley & Sons.

Department of Statistics Malaysia. (2019). Population and Housing Census. Retrieved 24 September 2019 from https://www.dosm.gov.my/v1/index.php?r=column/cone&menu_id=bDA2VkxRSU40STcxdkZ4OGJ0c1ZVdz09.

Eagan, K., Stolzenberg, E. B., Lozano, J. B., Aragon, M. C., Suchard, M. R., & Hurtado, S. (2014). Undergraduate teaching faculty: The 2013–2014 HERI faculty survey. *Los Angeles: Higher Education Research Institute, UCLA*.

Engel, G. L. (1971). Sudden and rapid death during psychological stress: folklore or folk wisdom? *Annals of internal medicine,* 74(5): 771-783.

Fasoro, A. (2018). Prevalence and Associated Factors of Current Depressive Symptoms among Staff of a Public University in Malaysia. *Online Journal of Health and Allied Sciences,* 16(4);1-5

Flynn, K., McDonald, C. C., D'Alonzo, B. A., Tam, V., & Wiebe, D. J. (2018). Violence in rural, suburban, and urban schools in Pennsylvania. *The Journal of School Nursing,* 34(4): 263-269.

Gillespie, N. A., Walsh, M., Winefield, A. H., Dua, J., & Stough, C. (2001). Occupational stress in universities: Staff perceptions of the causes, consequences and moderators of stress. *Work & Stress,* 15(1): 53-72.

Gmelch, W. H. (1993). *Coping with faculty stress* (Vol. 5): Sage.

Harder, N. J. (2010). Internationalisation efforts in United States community colleges: A comparative analysis of urban, suburban, and rural institutions. *Community College Journal of Research and Practice,* 35(1-2): 152-164.

Ismail, A., Yao, A., & Yunus, N. K. Y. (2009). Relationship Between Occupational Stress and Job Satisfaction: An Empirical Study in Malaysia. *Romanian Economic Journal,* 12(34):3-29

Ismail, N., Rahman, A. A., & Abidin, E. Z. (2014). Organisational Factors Associated with Occupational Stress among Lecturers in Community Colleges, Peninsular Malaysia. *Iranian Journal of Public Health, 43*(Supple 3): 125-130.

January, J., Madhombiro, M., Chipamaunga, S., Ray, S., Chingono, A., & Abas, M. (2018). Prevalence of depression and anxiety among undergraduate university students in low-and middle-income countries: a systematic review protocol. *Systematic reviews,* 7(1): 57.

Karasek Jr, R. A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative science quarterly*, 24(2): 285-308.

Karasek, R. A., Triantis, K. P., & Chaudhry, S. S. (1982). Coworker and supervisor support as moderators of associations between task characteristics and mental strain. *Journal of Organizational Behavior,* 3(2): 181-200.

Khalid, S. M., Ali, K. A. M., & bin Mohamed Makhbul, Z. K. (2019). Assessing the effect of higher education service quality on job satisfaction among lecturers in premier polytechnics using HEDPERF model. *LogForum,* 15(3): 425--436.

Khalilzadeh, R., Khalkhali, H., & Yavarian, R. (2005). The relationship of job stress, depression and anxiety of nursing staff of Urmia University of Medical Sciences. *J Urmia Nurs Midwifery Fac,* 3(1): 10-17.

Khayat, S., Dolatian, M., Navidian, A., Mahmoodi, Z., Sharifi, N., & Kasaeian, A. (2017). Lifestyles in suburban populations: a systematic review. *Electronic physician,* 9(7): 4791.

Kinman, G. (1998). *Pressure points: A survey into the causes and consequences of occupational stress in UK academic and related staff*: Association of University Teachers London.

Knepp, K. A. F. (2012). Understanding Student and Faculty Incivility in Higher Education. *Journal of Effective Teaching,* 12(1): 33-46.

Loveday, V. (2018). The neurotic academic: anxiety, casualisation, and governance in the neoliberalising university. *Journal of Cultural Economy,* 11(2): 154-166.

Manaf, M. R. A., Qureshi, A. M., Lotfizadeh, M., Ganasegeran, K., Yadav, H., & Al-Dubai, S. (2016). Factors associated with anxiety and depression among outpatients in

Malaysia: A cross-sectional study. *Malaysian Journal of Public Health Medicine,* 16(3): 181-187.

Mukhtar, F., & Oei, T. P. (2011). A review on assessment and treatment for depression in Malaysia. *Depression research and treatment,* 2011:1-8, https://doi.org/10.1155/2011/123642

Mukosolu, O., Ibrahim, F., Rampal, L., & Ibrahim, N. (2015). Prevalence of job stress and its associated factors among Universiti Putra Malaysia staff. *Malays J Med Health Sci,* 11(1): 27-38.

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

Mustapha, N. (2013). The influence of financial reward on job satisfaction among academic staffs at public universities in Kelantan, Malaysia. *International Journal of Business and Social Science,* 4(3): 244-248

Naylor, R., & Mifsud, N. (2019). Structural inequality in higher education: Creating institutional cultures that enable all students. In: Perth: National Centre for Student Equity in Higher Education.

Noor, A., & Ismail, N. H. (2016). Occupational stress and its associated factors among academician in a research university, Malaysia. *Malaysian Journal of Public Health Medicine,* 16(1): 81-91.

Noordin, F., & Jusoff, K. (2009). Levels of job satisfaction amongst Malaysian academic staff. *Asian social science,* 5(5): 122-128.

Razali, S., Yung-An, C., Nazali, M. I. M., & Nawawi, H. M. (2019a). Depression and Its Contributing Factors: A study among staff of an academic institution in Malaysia. *Environment-Behaviour Proceedings Journal,* 4(12): 61-66.

Razali, S., Yung-An, C., Nazali, M. I. M., & Nawawi, H. M. (2019b). Determining Predictors of Depression and Anxiety for Prevention of Common Mental Illness among Staff of an Academic Institution in Malaysia. *Asian Journal of Quality of Life,* 4(17): 1-13.

Shahijan, M. K., Rezaei, S., & Preece, C. N. (2016). Developing a framework of internationalisation for higher education institutions in Malaysia: a SWOT analysis. *International Journal of Management in Education,* 10(2): 145-173.

Song, S.-Y. (2019). New patterns of governance in higher education: Predictors of the shift toward academic capitalism. *KEDI Journal of Educational Policy,* 16(1): 21-44

Tai, K. L., Ng, Y. G., & Lim, P. Y. (2019). Systematic review on the prevalence of illness and stress and their associated risk factors among educators in Malaysia. *PloS one,* 14(5):1-18. https://doi.org/10.1371/journal.pone.0217430

Thorsen, E. J. (1996). Stress in academe: What bothers professors? *Higher education,* 31(4): 471-489.

Tytherleigh, M. Y., Jacobs, P., Webb, C., Ricketts, C., & Cooper, C. (2007). Gender, Health and Stress in English University Staff—Exposure or Vulnerability? *Applied Psychology,* 56(2): 267-287.

Van Thanh, L. (2016). Relationship at work as a cause of occupational stress: the case of academic women in Vietnam. *International journal of mental health systems,* 10: 1-15.

Watts, J., & Robertson, N. (2011). Burnout in university teaching staff: A systematic literature review. *Educational Research,* 53(1): 33-50.

Winefield, A. H., Gillespie, N., Stough, C., Dua, J., Hapuarachchi, J., & Boyd, C. (2003). Occupational stress in Australian university staff: Results from a national survey. *International Journal of Stress Management,* 10(1): 51.

Zuberi, D., Ivemark, B., & Ptashnick, M. (2018). Lagging behind in suburbia: Suburban versus urban newcomers' employment settlement service outcomes in Metro Vancouver, Canada. *The Social Science Journal,* 55(4): 443-454.