



The Perception of Work-Related Stress Indicators and The Relative Importance of Job Demand Stressors Among Construction Professionals in Malaysia

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Abstract: In several countries in the world, work-related stresses faced among the professionals in the construction industry came together with the significantly unidentified symptoms and factors. Occupational stress could negatively affect the mental, physical, and behavior of an individual. The factors of work-related stress commonly caused by high job demand with low job control and support, the poor physical environment of an organization, discrimination from employers and employees, and conflict outside of work. The study of occupational stress had been researched by many researchers, but the study of occupational stress particularly among construction professionals is still lacking in Malaysia. Therefore, this study aims to investigate the occupational stress levels that are focusing on professionals who work in the construction industry in Malaysia. A multi-sectional questionnaire is developed to identify the level of work stress, factors that contribute to work stress, and the effects on professionals in the construction industries. The analysis shows that the professionals faced a controlled level of stress on physical, mental, and emotional states. Furthermore, some of the few top job demand stressors are obtained, which are critical cost constraints, the need for interpersonal skills, and the high frequency of reporting demand. Although the professionals' stress levels are in the non-very-critical levels, there are still cases that fall into the critical level. Therefore, this study investigated the causes of occupational stress among professionals and how they affected their mental, emotional, and physical state. Moreover, this study has identified the job demand factors that contributed to the stress level of the professionals. At the same time, filling the gaps of previous studies related to the work-stress level on the professionals in the Malaysian construction industry.

Keywords: Construction, work-related stress, job demand stressor, mental stress

1. Introduction

Occupational stress has been a major hazard of modern workplaces and causes many damages where it is linked with the increased rate of accidents, low productivity, and high rate of absences (Taap Manshoret al, 2003). In the construction industry, workers and professionals are exposed to occupational stress due to the high demands of performance excellence and high pressure in meeting goals within a very limited time (Edward et al., 2015). However, there are only a few studies

that focus on mental, physical, and emotional afflictions that are caused by occupational stress. Most of the studies are focused on the immediate type of effect such as that can cause fatality or physical impairment to workers.

Stress can be widely defined as the negative reaction that people are experiencing in Stress can be widely defined as the negative reaction that people are experiencing in aspects of their environments as what they perceived upon it. Stress is considered as a response to a stimulus that includes a sense of the inability to overcome or cope with their situations (De Silva et al, 2017). The work stress level among professionals in the construction industry is considerably increasing due to the booming economic development projects in developing countries (Bowen et al, 2014). Furthermore, according to section 60 (A) of the Employment Act 1955, the working hours in Malaysia are 8 hours per day and 6 days per week. In the construction industry, working hours are often exceeded. Professionals often take their work home to finish work early and meeting the due date. Long working hour is one of the factors of work-related stress among professionals. Under such circumstances, many construction professionals must work under pressure to the extent they are facing mental problems such as stress, anxiety, and even depressions (Enshassi et al., 2015).

Employees worldwide have been reporting that they are increasingly stressed at work, but most of the studies were undertaken in Western countries, such as in the UK, US, and Australia (Idris et al., 2010). Even though there are studies regarding occupational stress in Malaysia, these studies were mainly implemented in other industries such as healthcare, IT, and manufacturing. Further, it is believed that no study investigates occupational stress among construction professionals in the Malaysian construction industry. The authors suggest that since the site-based construction professionals usually work long hours and are exposed to psychosocial hazards such as job demand stress and poor work-life balance, it is important to investigate their work-stress level. Moreover, work-related stress could also affect construction professionals differently based on their groups and gender. As such, building on the same instrument by Edwards et al. (2015), this study aims to investigate work-related stress indicators and the relative importance of job demand stressors among construction professionals in Johor.

2. Overview of Work-Related Stress Scenario in the Construction Industry

Construction has been known to be one of the deadliest professions in the United Kingdom, but it does not involve falling from heights or falling objects. However, it became deadly due to the high suicide rate among its workers that records for more than 1,400 cases between 2011 until 2015 (Rice-Oxley, 2019). Laborers are most likely recorded to suffer from these issues that lead to poor performance. Fig. 1 shows the suicide rate by profession in England from 2011 to 2015.

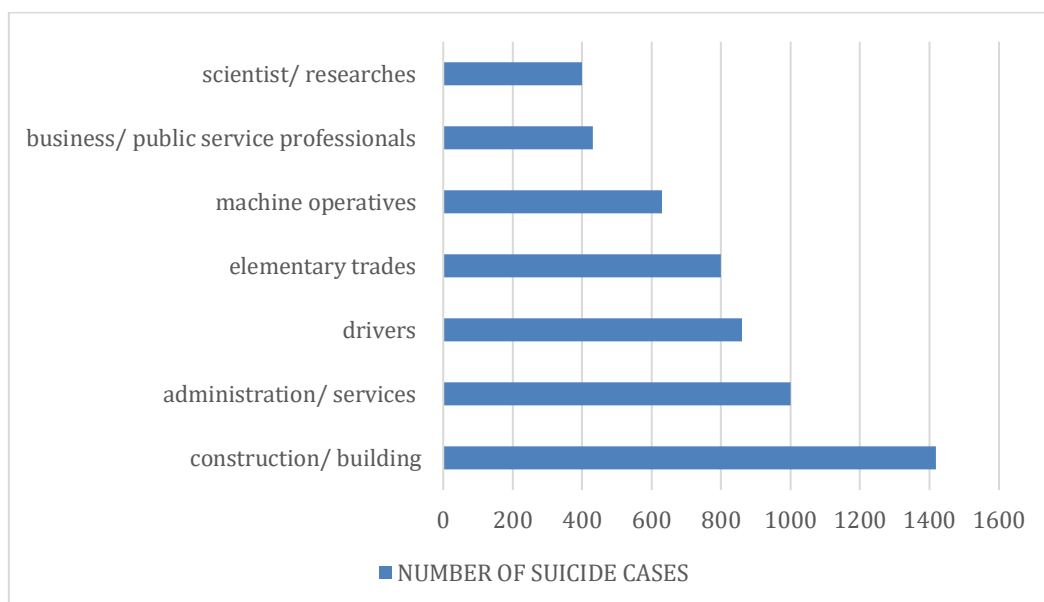


Fig. 1 - Suicide cases by profession in England, 2011-2015 (Source: Rice-Oakley, 2019)

The statistics of suicide among construction workers are specifically 1419 cases and 60% of construction workers faced bullying that may be the major reason for the high suicide rate (Chesterfield, 2019). Among professionals, contractors, developers, and engineers face a highly pressured work environment as they are committed to taking care of their workers' well-being and ignoring their own which resulted in facing too much pressure and killed themselves. Workers also have admitted that they are suffering from mental health due to cultural expectations as they are forced to only deal with it by themselves and not seeking help until their symptoms worsened. Following recent research, Centre for Disease Control and Prevention (CDC) in the United States records that males who are working in the construction and extraction industry have the highest suicide rate (Peterson et al., 2018).

On the other hand, Malaysia does not hold many official records on the suicide rate among the construction industry as in general Malaysians are not fully aware of mental health and the consequences of it. A New Straits Times (NST) article in August 2018 had stated a total of 1,696 people died committing suicide and 625 failed their attempt. This case has increased alarmingly (Shah, 2018). However, there are no official records on a suicide case involving construction workers. Furthermore, previous studies on occupational stress and its contributory factors can only be found abundantly in other countries but in Malaysia, there were only a few and it specifies only a certain position in the industry like consultants, project managers, and laborers.

2.1 Job Demand Factors and Work-Related Stress

Job demands are one of the job-related stress factors which cause conflicts that results in stress. According to the Job Demand Control (JDC) mode of occupational stress, occupation or job that is a simultaneously high demand but low in control creates the highest stress response and produces the most damages to one's health (Makhbul & Idrus, 2009). Job demand factors include the professionals needing to work for projects that have a tight budget within a limited period and having to give the best qualities making it the most stressful factor that professionals need to face constantly [9]. Moreover, construction professionals that are working in construction contracting organizations experience a higher level of stress and lower level of workplace support in comparison with professionals that are working in consulting organizations (Makhbul & Idrus, 2009).

The three significant stressors among construction professionals are heavy workloads, long working hours, and insufficient family time. On top of that, it was also found that the site-based professionals in the construction organizations received far more stress and burn-out than their office counterparts (Bowen et al., 2014). Furthermore, according to Bowen et al. (2014), construction professionals that are working in construction contracting organizations experience a higher stress level and lower support at the workplace in comparison with professionals that are working in the consulting organizations. Even so, the actual working hours in the construction industry have not been recorded as having longer working hours than any other professions but sufficient evidence exists to say they are arduous (Bowen et al., 2014). Other than that, site professionals face far more challenges than those that are working in offices. This is because of the unpredicted harsh physical and environmental conditions that can strike them at any time. In the office professionals usually faces challenges in achieving deadlines and having to change their designs and ideas constantly with having to face clients and authorities. Construction professionals must be ready for any type of challenges that are thrown at them and this may be the major causes of occupational stress and burnouts resulting in poor performance, absenteeism, and more.

The effects of work-related stress can be categorized into physical, psychological, and behavioral consequences, as shown in Table 1.

Table 1 - Effect of occupational stress to construction professionals

Physical effects	Psychological effects	Behavioural effects
<ul style="list-style-type: none"> Eating disorder (De Silva et al, 2017) Chronic fatigue (Mosadeghrad, 2014) Increase in blood pressure (De Silva et al, 2017) Cardiovascular disease (Makhbul & Idrus, 2009) Musculoskeletal pains (Makhbul & Idrus, 2009) 	<ul style="list-style-type: none"> Emotional exhaustion (Ibem et al, 2011) Mood disturbance (Mosadeghrad, 2014) Sleeping disorder (De Silva et al, 2017) Lack of concentration (Bowen et al, 2014) Depression (Taap Manshor et al, 2003) Suicide thoughts (Ibem et al, 2011) Anxiety (Enshassi et al., 2017) Lack of motivation (Enshassi et al., 2017) 	<ul style="list-style-type: none"> Absenteeism (Mirela & Madalina-Adriana, 2011) Poor work performance (Ibem et al, 2011) Alcohol abuse (Ibem et al, 2011)

3. Methodology

3.1 Development of Questionnaire

This study used a survey questionnaire method to attain information on the work stress level among respondents and their perceptions on the crucial job demand factors. The survey was distributed among site-based construction professionals such as engineers, project/construction managers, safety and health officers (SHO), surveyors, and other professionals

who were working at construction sites in Johor. The questionnaire is divided into 3 parts namely part A, part B, and part C. Part A focuses on the demographic information of the respondents such as the position, age, and working experiences. Part B consists of eight-interval sections that describe what they were experiencing emotionally, physically, and mentally. The indicators of the eight sections were explained to assess the work stress level of professionals in the construction industry as shown in Table 2.

Table 2 - Work stress level indicators (Source: Edwards et al., 2015)

Scales	Physical Indicators	Mental indicators	Emotional Indicators
0	Completely comfortable and untroubled physically.	Routine work requiring minimal concentration	Relaxed and at peace. Satisfied with work performance.
1	Relaxed and comfortable. Good energy level sustained.	No great intellectual demand but there are things that need to be considered.	Calm, pleased with the work conducted.
2	Not feeling tense or uncomfortable. Adequate energy level.	Aware of the need to be focused. Creative and analytical intellect is required.	Excited by the process and achievements of work
3	Feeling tense occasionally. Feeling a little tired. Needing intermittent resting.	Higher focus is needed for the task. Multi-tasking may be needed	Highly satisfied with personal work and progress.
4	More frequent or longer tension periods. Some skeleton-muscular aching. Fatigue more evident. Needing breaks occasionally.	Extreme concentration needed and experiencing shorter focus and attention towards work.	Feel relief when problem or task is resolved. Having concern over the issues that will appear afterwards.
5	Feeling tense persistently. Having headaches, shoulder or neck discomfort occasionally. Need breaks frequently.	Difficult to concentrate. Constantly distracted and cannot focus towards task at hand.	Frustrated with the work progress and will be easily disappointed with minor inconvenience.
6	Constant tension and having frequent aches or pains. Always feeling fatigued.	Unable to think clearly on the task given and any work issues. Minor and insignificant issues will seem complicated. Attention period seriously shortened.	Frequently angry. Blaming own self (depressed) and others (rows and conflict). Having constant “fight or flight” conflict with one self.
7	Lethargically feeling sluggish. Having extreme headaches, aching and experience constant distress.	Overwhelmed in every situation. Unable to concentrate and think properly on anything regarding or beyond work.	Having the feeling of helplessness, isolated and desperations. Being closed in experiencing panic attacks.

In section C, the respondents were offered 5-point Likert scale options to indicate the level of importance and the degree of contributions of job demand contributors to occupational stress that consists of 25 items. The respondents needed to rank the top five items which frequently occurred during their work experience.

3.2 Pilot Study

A pilot study was conducted to check the content validity and reliability of the survey instrument. For content validity, the designed questionnaire was sent to experts that have a minimum of 5 years of working experience and are directly involved in construction projects from different positions like Safety and Health Officer, Engineers, and Project Managers. Two experts had validated the questionnaire and it had been updated and edited. The questionnaire was then sent to 11 experts for them to answer to test its reliability.

The reliability of the questionnaire items was analyzed using Cronbach’s Alpha analysis. This involved 10 selected experts who were also professionals in the construction industry, possessed more than 5 years of working experiences and has directly managed construction site. Cronbach’s alpha results are range from 0 to 1 which negative values give meaning that the data is not correct. The minimum score of the Cronbach’s Alpha test was 0.70 and this means that the

questionnaire is considered reliable. From the result analysis, the Cronbach's Alpha test result was 0.941 which again another indication of its reliability.

3.3 Data analysis

The data were tested for normality, Mann-Whitney, and Kruskal Wallis for objectives 1 and 2, using the Statistical Package for Social Science (SPSS) tool. For objective 3, the data was analyzed using the Relative Important Index.

3.3.1 Normality Test

The normality test is used in determining whether the data is analyzed by using a parametric test or non-parametric test. In the study, the researcher uses Kolmogorov-Smirnov for the normality test as the sample size was assumed to be larger than 50. If the p-value is more than 0.05 ($p > 0.05$) then the test uses a parametric test while if p-value is less than 0.05 ($p < 0.05$), the non-parametric technique will be used for further analysis. The result of normality tests was $p = 0.00$ for stress level indicators and $p = 0.00$ for job demand factors. This has indicated that the data of the study were non-parametric, and two tests were chosen which were the Kruskal-Wallis H test to differentiate stress levels between professional groups and the Mann-Whitney U test to differentiate the stress levels between genders of professionals.

3.3.2 Mann-Whitney U Test

Mann-Whitney U test is used to compare the ranks between two unrelated groups that are dependent when the data distribution is not normal. This test is undertaken to determine the significant differences in physical, mental, and emotional stress levels while ranking the groups based on the genders of the professionals. If the p-value is more than 0.05 ($p > 0.05$), then there are no significant differences between the independent groups.

3.3.3 Kruskal-Wallis H Test

Kruskal-Wallis H test is aimed to rank amongst more than three under different groups on independent variable where the dependent variable is not normally distributed. The test is used to test the differences in physical, mental, and emotional stress levels based on respondents' groups of professions. If the p-value is more than 0.05 ($p > 0.05$), therefore there is no significant difference between the independent groups.

3.3.4 Relative Importance Index

To identify the importance of job demand factors that caused work-related stress, the Relative Importance Index (RII) was used. The relative importance index is defined as the mean for a factor that gives the weight of importance in the perceptions of respondents [16]. The formula to calculate the RII is shown below:

$$RII = \frac{\sum w}{AN} = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5N} \quad (1)$$

Where;

W= weighting given to each factor by the respondents

A= highest value of importance (weight)

n= number of respondents

N= total number of respondents

4. Results and Discussion

A total of 51 returned questionnaire forms were received from respondents. The demographic profile of respondents is shown in Table 3.

Table 3 - Demographic profile of respondents

Profession	Number of respondents	Gender	
		Male	Female
Engineer	27	17	10
Project/Construction Manager	5	5	1
SHO	2	1	1
Quantity Surveyor	3	1	2
Others	14	9	4
Total	51	33	18

4.1 Stress Level Indicators Between the Genders of Respondents

4.1.1 Physical Stress

The stress level indicators among the professionals based on their genders are shown based on physical stress indicators, mental stress level indicators, and emotional stress level indicators. Table 4 shows the number of responses for stress level indicators between male and female professionals. The physical stress level of 3 is recorded to be the highest among males and females alike with a total of 20 responses together. It is observed that none of the respondents feels tense persistently as stated in 'stress level 5' and feeling lethargically sluggish as in 'stress level 7'. While it was reported that physical stress level ranged from 1 to 3 were most likely experienced by the male and female professionals.

Table 4 - Physical stress level (SL) of respondents

No.	Physical Indicator	Number of Respondents	
		Female	Male
PSL.0	Completely comfortable and untroubled physically	0	2 (6.1%)
PSL.1	Relaxed and comfortable. Good energy level sustained	4 (22.2%)	8 (24.2%)
PSL.2	Not feeling tense or uncomfortable. Adequate energy level.	5 (27.8%)	7 (21.2%)
PSL.3	Feeling tense occasionally. Feeling a little tired. Needing intermittent resting.	8 (44.4%)	12 (36.4%)
PSL.4	More frequent or longer tension periods. Some skeleton-muscular aching. Fatigue more evident. Needing breaks occasionally.	1 (5.6%)	1 (3%)
PSL.5	Feeling tense persistently. Having headaches, shoulder or neck discomfort occasionally. Need breaks frequently.	0	0
PSL.6	Constant tension and having frequent aches or pains. Always feeling fatigued.	0	3 (9.1%)
PSL.7	Lethargically feeling sluggish. Having extreme headaches, aching and experience constant distress.	0	0

4.1.2 Mental Stress

Table 5 shows the number of respondents for each mental stress level indicators. The mental stress level indicators recorded 'stress level 3' was the highest among male professionals while 'stress level 2' was recorded as the highest among female professionals. However, there was 0 response on stress level indicators ranging from 6 to 7.

Table 5 - Number of respondents of mental stress level indicators between gender

No.	Mental Indicator	Number of Respondents	
		Female	Male
MSL.0	Routine work requiring minimal concentration	1 (5.6%)	2 (6.1%)
MSL.1	No great intellectual demand but there are things that are need to be considered.	1 (5.6%)	5 (15.2%)

MSL.2	Aware of the need to be focused. Creative and analytical intellect is required.	9 (50%)	10 (30.3%)
MSL.3	Higher focus is needed for the task. Multi-tasking may be needed	7 (38.9%)	14 (42.4%)
MSL.4	Extreme concentration needed and experiencing shorter focus and attention towards work.	0	1 (3%)
MSL.5	Difficult to concentrate. Constantly distracted and cannot focus towards task at hand.	0	1 (3%)
MSL.6	Unable to think clearly on the task given and any work issues. Minor and insignificant issues will seem complicated. Attention period seriously shortened.	0	0
MSL.7	Overwhelmed in every situation. Unable to concentrate and think properly on anything regarding or beyond work.	0	0

4.1.3 Emotional Stress

The emotional stress indicators for the ‘stress level 4’ was having the highest responses (Table 6). This indicated that most professionals felt relieved after resolving problems or tasks. They also were very concerned if the same complications in completing the task would happen again in the future.

Table 6 - Number of respondents based on gender for emotional stress level

No.	Emotional Indicator	Number of Respondents	
		Female	Male
ESL.0	Relaxed and at peace. Satisfied with work performance.	1 (5.6%)	3 (9.1%)
ESL.1	Calm, pleased with the work conducted.	3 (16.7%)	6 (18.2%)
ESL.2	Excited by the process and achievements of work	2 (11.1%)	5 (15.2%)
ESL.3	Highly satisfied with personal work and progress.	0	4 (12.1%)
ESL.4	Feel relief when problem or task is resolved. Having concern over the issues that will appear afterwards.	12 (66.7%)	13 (39.4%)
ESL.5	Frustrated with the work progress and will be easily disappointed with minor inconvenience.	0	2 (6.1%)
ESL.6	Frequently angry. Blaming own self (depressed) and others (rows and conflict). Having constant “fight or flight” conflict with one self.	0	0
ESL.7	Having the feeling of helplessness, isolated and desperations. Being closed in experiencing panic attacks.	0	0

4.1.4 Comparison of Stress Level Between Genders

A Mann-Whitney test for all of the stress level indicators was conducted to determine whether there are differences in stress level for all indicators between males and females. Table 7 and 8 show a summary of the Mann-Whitney test. The Mann-Whitney test indicated that the physical and emotional stress level was slightly greater for female than male respondents ($U=289$, $p=0.869$; and $U=289$, $p=0.867$, respectively). Whereas the mental indicator was greater for male than female respondents ($U=263$, $p=0.483$).

0

Table 7 - Mean rank values of stress level indicators between genders

	Genders	N	Mean Rank	Sum of Ranks
Physical Stress Level	Male	33	25.76	850.00
	Female	18	26.44	476.00
	Total	51		
Mental Stress Level	Male	33	26.24	866.00
	Female	18	25.56	460.00

	Total	51		
Emotional Stress Level	Male	33	24.98	824.50
	Female	18	27.86	501.50
	Total	51		

Table 8 - Test statistic results for Mann-Whitney U test

	Physical Stress Level	Mental Stress Level	Emotional Stress Level
Mann-Whitney U	289.000	289.000	263.500
Wilcoxon W	850.000	460.000	824.500
Z	-0.165	-0.167	-0.701
Asymp. Sig. (2-tailed)	0.869	0.867	0.483

4.2 Stress Level Indicators Between Professional Groups of Respondents

4.2.1 Physical Stress

The differences in stress level indicators were also recorded based on their professional groups that come from various organizations in the industry. Engineers seemed to experience physical stress for all indicators, except PSL.05 and PSL.07. Fig. 2 shows the distributions of respondents for physical stress indicators among professional groups. Furthermore, by observing Fig. 2, ‘stress level 3’ where professionals felt tense occasionally and need intermittent resting has responses from most of the professional groups. It consisted of the accumulation of other professionals in the construction industry. The engineers were more dispersed through stress level indicators ranging from ‘2’ until ‘5’ and no responses in stress level ‘4’, ‘6’, and ‘7’.

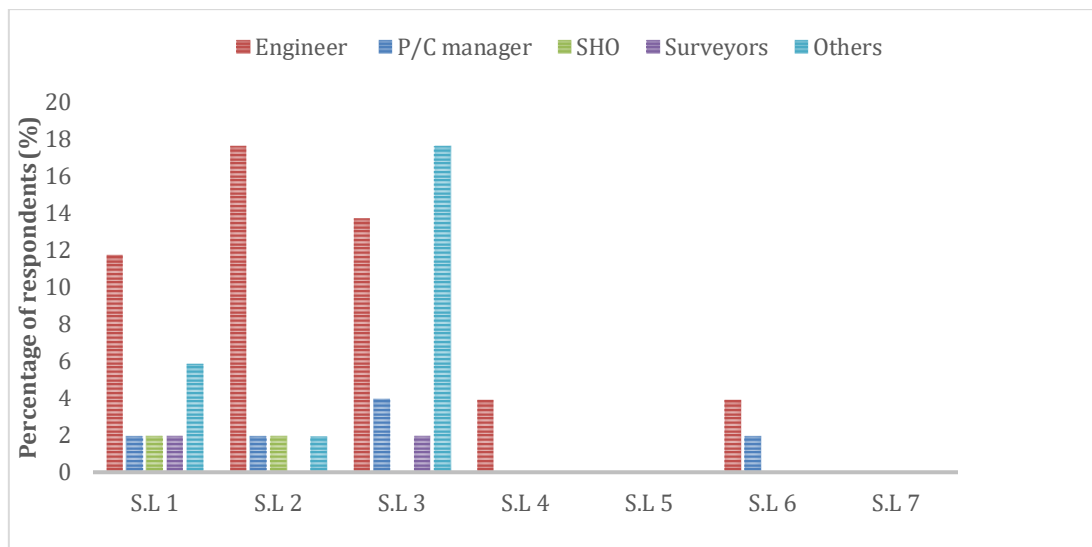


Fig. 2 - Distributions of physical stress indicators among professional group

4.2.2 Mental Stress

The distribution of mental stress level indicator is shown in Fig. 3 where ‘stress level’ 3’ has recorded to be the highest responses with engineers, quantity surveyors, and land surveyor responses were accumulated in ‘stress level 3’. This indicated that most of the professional groups feel that they need a higher focus in completing a task while needing to multitask. The distribution of responses recorded that no responses were indicated from stress level 6 to 7 while most responses were dispersed from stress level 0 until 5.

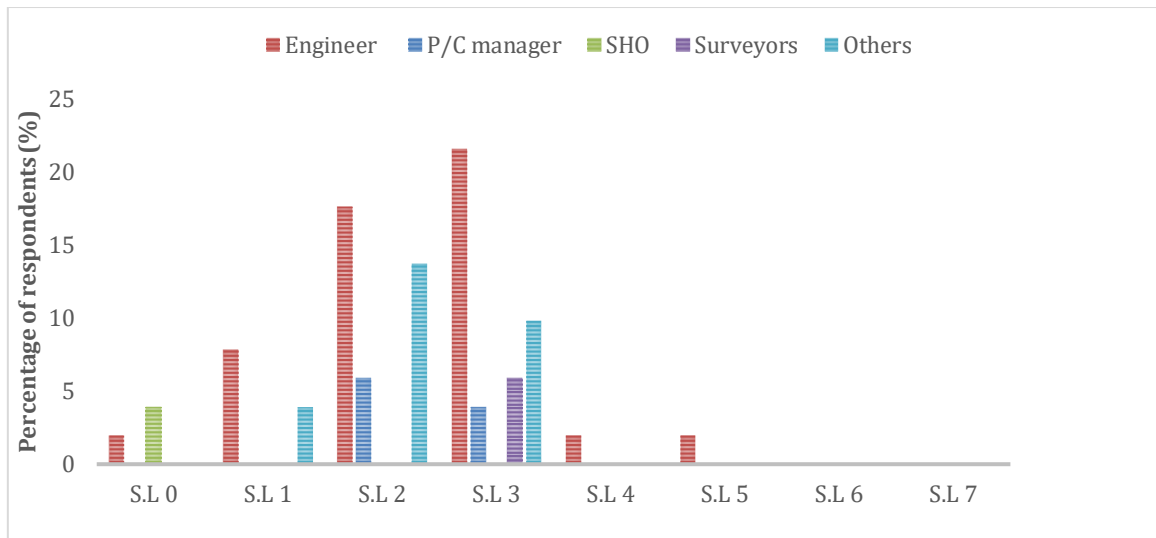


Fig. 3 - Distributions of mental stress level indicators among professional group

4.2.3 Emotional Stress

Emotional stress indicators as shown in Fig. 4 below show the responses of the majority of the professional groups which were accumulated in ‘stress level 1’. This indicated that most of the professionals were calmed and pleased with their work. None of them responded in ‘stress level 6’ and ‘stress level 7’ which indicated that their emotions were still in control.

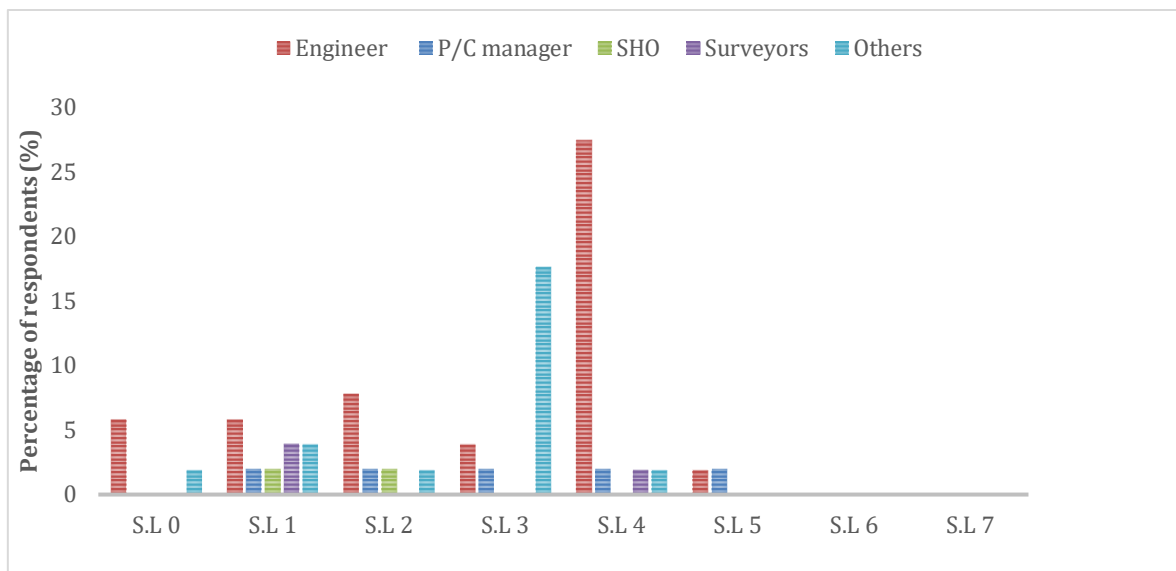


Fig. 4 - Distributions of emotional stress level indicators among professional group

4.2.4 Between-Group Comparison of Stress Level Among Construction Professionals

Kruskal-Wallis test was adopted to measure the intergroup discordance for comparison between groups. This test can determine the degree of disagreement in stress level (i.e., physical, mental, and emotional) for all professional groups. Table 9 presents the result of the Kruskal-Wallis.

Table 9 - Results of Kruskal-Wallis test

	Professions	N	Mean Rank	Chi square	Asymp. Sig.
Physical Stress Level	Engineer	27	25.46	0.744	0.946
	Project/Construction manager	5	30.40		
	SHO	2	22.50		
	Surveyor	5	27.70		
	Others	12	25.25		
Mental Stress Level	Engineer	27	27.19	6.711	0.152
	P/C manager	5	26.80		
	SHO	2	2.00		
	Surveyor	5	30.70		
	Others	12	25.04		
Emotional Stress Level	Engineer	27	26.24	3.518	0.475
	P/C manager	5	27.00		
	SHO	2	13.00		
	Surveyor	5	20.00		
	Others	12	29.71		

Kruskal-Wallis H test indicated that there was no statistically significant difference in physical stress level, mental stress level, and emotional stress level between the professions ($\chi^2(4) = 0.744, p = 0.946$; $\chi^2(4) = 6.711, p = 0.152$; and $\chi^2(4) = 3.518, p = 0.475$ respectively) with the highest mean rank scoring for physical stress level, mental stress level and emotional stress level were recorded by the project or construction manager (30.40), surveyors (30.70), and other professionals (29.71) respectively.

Table 10 - Stress levels between groups

Profession		Physical Stress Level	Mental Stress Level	Emotional Stress Level
Engineer	Median	2.0000	2.0000	4.0000
	N	27	27	27
P/C manager	Median	3.0000	2.0000	3.0000
	N	5	5	5
SHO	Median	2.0000	.0000	1.5000
	N	2	2	2
Surveyor	Median	2.0000	3.0000	1.0000
	N	3	3	3
Others	Median	3.0000	2.0000	4.0000
	N	14	14	14
Total	Median	2.0000	2.0000	4.0000
	N	51	51	51

Data on the medians according to Table 9 shows that on average continuous variables, the project or construction manager, and other professionals recorded higher figures compared to engineers, surveyors, and SHO for physical stress levels. Besides that, surveyors were the highest in median (3.00) for mental stress level while for emotional stress levels, it was indicated that engineers and other professionals had recorded the highest-scoring of the median which was 4.00.

4.3 Relative Importance Index for Relative Importance of Job Demand Factors

This study analyzed a relatively important index for the 25 items of job demand factors that contributed to work-related stress among construction professionals. Table 4.12 shows the relative importance index of each item and the importance rank of the factors.

The top 5 job demand factors that contributed to work-related stress are the need for leadership skills, critical time constraints, high level of information processing skills, high amount of professional experience required, with a tie of relative importance rank of the frequency of reporting demand, and the requirement of interpersonal skills.

Table 11 shows the rank of job demand factors based on their level of importance in contributing to work-related stress as perceived by construction professionals. However, the results shown are in disagreement with (Edwards et al., 2015) as the previous study perceived that project characteristics factors (i.e. critical time constraints and critical cost constraints) to be the highest contributory factors to work-stress level whereas this study indicates that personal skills and competencies related factors (i.e. high leadership skills and requirement of interpersonal skills) are the highest contributory factors that were perceived by construction professionals.

Table 11 - Ranking of job demand factors that contribute to work-related stress

No.	Items	Relative Importance Index	rank
1	High leadership skills needed in handling project	0.7804	1
2	Critical time constraints	0.7725	2
3	High level of information processing skills	0.7490	3
4	High amount of professional experience required	0.7412	4
5	High frequency of reporting demands	0.7373	5
6	Requirement of interpersonal skills	0.7373	5
7	High-level reporting demands	0.7333	7
8	High-level meetings required	0.7294	8
9	Long working hours	0.7255	9
10	Number of staff in workplace from different level	0.7176	10
11	High complexity of project problems	0.7137	12
12	High level of professional skills required	0.7137	12
13	Critical cost constraints	0.7098	13
14	Skewing of work/family life balance	0.7059	14
15	Co-operation from other project stakeholders	0.7020	16
16	Task frustrations (interruptions)	0.7020	16
17	Red tape level encountered	0.6902	17
18	Disruption to leisure activities	0.6784	18
19	Frequent number of meetings required	0.6627	19
20	Disruption to sport/ exercise activities	0.6588	20
21	Needing to 'prove' oneself to employers	0.6510	21
22	High level of ICT competence level	0.6392	22
23	Frequent job travel demand	0.6275	23
24	Disruption of meal patterns	0.6118	24
25	Low adequacy of technical resources (ICT, etc.)	0.5765	25

5. Discussion and Conclusion

Work-related stress in the construction industry has become a serious and widespread problem in the construction industry and it needed to be addressed accordingly. Over time, if this issue about the negligence of the well-being of professionals in the industry is ignored, there is a possibility that this problem can become worse and will affect the productivity of the industry. While conducting this research there was a very limited previous study regarding the professionals or workers in the construction industry.

The findings from this study able to identify the level of stress in three indicators which are physical, mental, and emotional. It varies according to genders and professional groups. However, the study shows that most respondents are not in a critical state of stress level. Even though they were feeling extremely sluggish and had to experience constant distress physically, they were still able to think clearly and not overwhelmed by the tasks given at hand. Furthermore, they were also not having emotionally unstable, frequently angry, not in the state of feeling helpless and experiencing panic attacks. We can conclude that most of the professionals were still able to control their emotions as they were still able to feel relief when completing a task and ready to overcome any unexpected future issue. Even so, there was still a minority of professionals with a concerning emotional stress level. They were started feeling frustrated with work and easily disappointed with any minor inconvenience faced while handling any tasks or problems.

Most professionals were in control of their mental state and still able to focus and multitask. Even so, there was a minority among the professionals that had a concerning mental stress level. They were unable to concentrate and constantly distracted when doing their work. This issue might need to be addressed earlier and the professional or employers need to help in overcoming the issue so that the professionals would not fell into a more critical stress level. The critical state would result in them unable to think clearly and being overwhelmed. This was because when a person was overwhelmed, they might not be able to control their actions and emotions which lead to the worst scenario like suicide.

Other than that, a large group of professionals were facing occasional tension to their body and only needed intermittent resting. This had proven that they were not in a critical state or facing extreme exhaustion. However, some professionals faced a more critical stress level state physically as they had been in constant physical tension and experiencing continuous fatigue. As for this case, the professional needed more rest and more leisure activities to help to improve their body health and avoid further exhaustion. This is important in keeping a person to be proactive and productive.

The findings of this study also show that the top job demand factors that contributed to work-related stress mostly related to interpersonal, project characteristics, and also work process issues. However, it was hard to conclude that clusters can be identified among the 25 factors as every professional had different opinions and experiences that will contribute to their stress. Moreover, there were no significant differences between gender and professional groups in the responses to the questionnaire distributed under the rating of the importance of the job demand factors. The findings in this study were not similar comparing to the previous studies as the highest perceived contribution stress of job demand factors are interpersonal and leaderships while in previous studies it perceived more on project administrations.

There are several limitations to the study, which include:

- The number of respondents was notably less than the targeted respondents as the study only depend on online surveys due to the Covid-19 pandemic which causes most construction companies to close their operations during the period of the study conducted. The research data collections were distributed limited to mutual contacts and making it unable to achieve the targeted respondents.
- The data distributions of the research were not similarly distributed. One professional group was greatly higher than the others due to limited approaches to other professionals.

For future study, it is recommended that:

- Thoroughly identify the type of trades, professional fields, and organizations that are in the construction industry. Being able to specifically identify the professional groups and trades will enable the future researcher to point out which group faces the most stress and have a better understanding of identifying the causes of their stress.
- Widen the scope of study not limiting to only construction professionals but all construction workers as the industry have hierarchy and each hierarchy level faces a different level of stress. Therefore, widening the scope of the study will enable a better understanding and unbiased findings in the future.
- Consulting experts that are familiar with human psychology as work-stress is still unfamiliar in the construction industry and therefore when having connections with experts that are familiar with human psych will enable the future researcher to have better alternatives in controlling or minimizing the negative effects of work-related stress.

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