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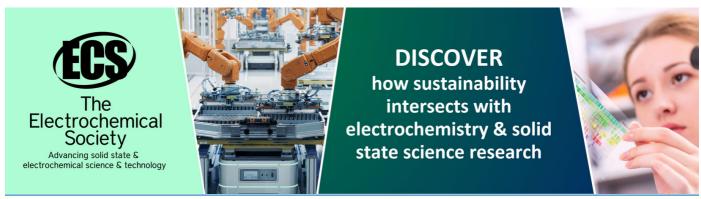
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Electrical Technology Students in Vocational Colleges: Are They Healthy Mentally?

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Abstract. Distraction such as depression, anxiety, and stress in mental health problem can influence academic achievement to students, including vocational colleges' students. Hence, the main purpose of this study was to determine the mental health profiles of Electrical Course students in Vocational Colleges. The difference in mental health level in terms of gender, hometown, and years of study were also be investigated. Besides, the level of mental health elements implementation by teachers in teaching and learning was also determined. This study was employed a survey method as research design that involved of 132 respondents from three vocational colleges in the southern zone. The respondents were selected using strata sampling technique. The instrument of this study was Malay version DASS-21 item inventory. This inventory measures three elements of mental health problem, namely depression, anxiety, and stress through 21 items. Questionnaires for level of mental health elements implementation by teachers in teaching and learning from student perception consists of 21 items. The collected data were analyzed using frequency, percentage, Spearman Rho test, Mann Whitney U test, and Kruskal Wallis test. The findings of this study showed that students' mental health level and the level of mental health elements implementation by teachers in teaching and learning were at the moderate level. The findings also found that there was a significant relationship between each element of mental health with students' academic achievement level, as well as the level of mental health elements implementation by teachers in teaching and learning. In addition, the results also shows that there were no significant difference in the mental health level among the students from the aspects of gender, hometown, and years of study. In short, an intervention program needs to be implemented to overwhelm students' mental health problems, because prevention was better than cure.

1. Introduction

Many studies have reported that there is a strong relationship between mental health problems and students' academic achievement in schools, colleges and universities. The common mental health problems encountered by vocational colleges' students are the transition from primary school towards the anxiety on tests, failure in completing academic work, academic achievements, family and financial commitments. Studies also shown that students will experience emotional disorders and high stress level throughout their studies at vocational colleges. The high stress level will affect a student's health problem and his academic achievement [1]. However, many of them do not realize that stress can also lead to a positive direction. Stress under well manage can induce individuals to test their potential and reach their performance at maximum levels. Stress can be a positive aspect of learning if the student is able to take the stress as a challenge to expose their capability in learning [2]. Most of

the problems faced by stressed students are they do not know how to effectively control the stress. It is important to know the physical and emotional limit of student who is under stress. In order to overcome the negative aspect of stress in a student's life, he needs to know what is the factors lead him to stress because psychological adjustment can help in improving the effect of stress [3]. The negative effects of stress is inhibit the targeted achievement of student. Slow bloomer in academic is easy to experience stress. If stress is not addressed, this student may choose the wrong step and high tendency to fail more often than other students. Furthermore, [4] states that electrical engineering courses students are much more depressed than other courses.

Therefore, this study was conducted at Vocational Colleges (VC) and focused on electrical engineering course students because electrical engineering is a challenging and difficult discipline. Electrical Engineering's concept and theories are totally abstract, however, it has good prospects compared to the other courses at VC [5]. In order to improve the quality of education among the students, the level of awareness of mental health needs to be applied so that the country will not be burdened with the generation that suffering from mental health problems. Furthermore, mental health studies for vocational colleges are limited. Vocational college students take responsibility for mastering technical skills either through practical skills provided through an institutional curriculum or having self-initiative to follow any courses offering additional skills, as noted in the Malaysia Education Development Plan (Higher Education) that increase the number and quality of the program offered by HEIs and vocational colleges is one of the spikes in improving the quality of education in the country.

In short, this study aims to:
a) Identify mental health level among electrical course students at vocational colleges.
b) Determine the level of mental health elements implementation of the teacher in teaching and learning from the students'' perspective.
c) Investigate the relationship between mental health level and the academic achievement of electrical coursework students.
d) Analyze the differences in students' mental health problem based on their demographics (gender, hometown, year of study).

2. Methodology
This study was conducted by employing the survey method as research design in order to determine the mental health profiles among the Electrical Engineering students in vocational colleges. Survey was selected as research design because the data could be collected directly from respondents in a short time and the results could also be generalized to the population accurately and effectively [6]. A total numbers of 132 Electrical Engineering Course students from three vocational colleges in southern zone Malaysia were selected as respondents in this study. They were selected by using strata random sampling technique and the sample size was determine by referring to [7].

The instrument used in this study were DASS-21 inventory in Malay version to measure students' mental health problem and a set of self-developed questionnaire to measure the implementation level of mental health elements of teachers in teaching & learning. DASS-21 inventory consists of 21 items that determine three elements of mental health level, namely Depression, Anxiety and Stress. Each item was rating by using the following scale [8]:
    0 = did not apply to me at all
    1 = applied to me to some degree, or some of the time
    2 = applied to me to a considerable degree or a good part of time
    3 = applied to me very much or most of the time

The total score will classification into five categories, namely Normal> Mild> Moderate> Severe> Extremely Severe. Those who have Normal to Moderate level only need a general intervention

program but those who tend to have severe and extremely severe level may need clinical help to manage and conquer their mental health problem. As the scale of this inventory is tend to have high internal consistency, also being widely used among the researchers and clinicians [8], therefore, the reliability analyses can be excluded. Meanwhile, for the self-developed questionnaire, it is consists of 21 items and being developed by adapting to DASS-21 inventory in order to measure how well does a teacher implement the mental health elements during their teaching and learning session. Alpha Cronbach was used to test the reliability of this set of instrument. The results show that $\alpha = 0.72$, this means the instrument can be used to collect the needed data [6]. The collected data were analyzed using frequency, percentage, Spearman Rho test, Mann Whitney U test, and Kruskal Wallis test.

3. Results

3.1. Mental Health Level among the Electrical Engineering Students in Vocational Colleges

Table 1 shows the mental health level among the Electrical Engineering Students in Vocational Colleges. For the depression, most of the students tend to have moderate level, about 46 from 130 respondents (34.8%). Surprisingly, about 53 of them (40.1%) tend to have severe and extremely severe level in depression. The depression score level in descending order is moderate>severe>mild>extremely severe. For the anxiety element, most of the students, about 60 (45.5%) tend to have extremely severe level. The anxiety score level of the students in descending order is extremely sever>moderate>severe>mild. For the stress element, majority of them tend to have moderate level too, about 55 (41.7%) of them score at this level. The stress score level in descending order is moderate>mild>sever>extremely severe>normal.

Table 1. Students' Mental Health Level.

| Level | Elements of Mental Health | | | | | |
| | Depression | | Anxiety | | Stress | |
	f	%	f	%	f	%
Normal	0	0	0	0	11	8.3
Mild	31	23.5	10	7.6	28	21.2
Moderate	46	34.8	35	26.5	55	41.7
Severe	40	30.3	27	20.5	26	19.7
Extremely Severe	13	9.8	60	45.5	12	9.1
Total	130*	98.8	132	100	132	100

*2 missing value.

3.2. Level of Mental Health Elements Implementation of the Teacher in Teaching and Learning

Table 2 illustrates the mental health elements implementation in teaching & learning from the students' perspective. Findings show that students perceive teachers only implement and emphasize mental health problem at medium level. The mental health problem being highlighted by teachers during the teaching & learning session in descending order is depression (89.4%) >anxiety (84.1%) >stress (77.3%). Luckily, about three to five percent of the teachers concern about students mental health issues.

Table 2. Level of Mental Health Elements Implementation of the Teacher in Teaching and Learning.

| Level | Elements of Mental Health | | | | | |
| | Depression | | Anxiety | | Stress | |
	f	%	f	%	f	%
Low	7	5.3	14	10.6	25	18.9
Medium	118	89.4	111	84.1	102	77.3
High	7	5.3	6	4.5	4	3.0

| Total | 132 | 98.8 | 131* | 99.2 | 131* | 99.2 |

*1 missing value.

3.3. Relationship between Mental Health Level and Academic Achievement

Table 3 shows the correlation analyses between mental health score and students' CGPA using Spearman Rho. The findings showed that the mental health scores for all three elements have a significant correlation with students' academic performance measure in CGPA. For depression, $r = -.398$, $p<.0001$; anxiety $r = -.465$, $p < .0001$; stress $r = -.295$, $p < .0001$.

Table 3. Correlation between Mental Health Score & Students' CGPA.

Spearman Rho	Elements of Mental Health		
	Depression	Anxiety	Stress
Correlation coefficient	-.398	-.465	-.295
Sig (2-tailed)	.000	.000	.000

Correlation is significant at the 0.01 level (2-tailed).

3.4. Differences in Students' Mental Health Problem based on Their Demographics

Table 4 and Table 5 show the comparison of mental health score from the aspect of gender (male and female) and hometown (urban and rural) using Mann Whitney U test. The findings show that there are no significant difference in mental health score between male and female students, as well as urban and rural students. On the other hand, Table 6 show the comparison of mental health score among the year one, year two and year three students by using Kruskal Wallis Test. Findings indicate that there is no significant in mental health score among the year one, year two and year three students.

Table 4. Comparison Mental Health Score between Male & Female

	Elements of Mental Health		
	Depression	Anxiety	Stress
Mann Whitney U	1687.00	1889.50	1846.50
Asymp. Sig. (2 tailed)	.162	.678	.533

a. Grouping variable : Gender

Table 5. Comparison Mental Health Score between Urban & Rural

	Elements of Mental Health		
	Depression	Anxiety	Stress
Mann Whitney U	1153.00	1158.00	1055.00
Asymp. Sig. (2 tailed)	.938	.963	.490

a. Grouping variable : Home stay (Urban & Rural)

Table 6. Comparison Mental Health Score among Years of Study

	Elements of Mental Health		
	Depression	Anxiety	Stress
Chi Square	1.870	.876	1.193
df	2	2	2

Asymp. Sig.	.393	.645	.551

a. Kruskal Wallis Test
b. Grouping variable : Years of Study

4. Discussion

Findings show that majority of the electrical engineering course students in vocational colleges tend to have moderate level in depression and anxiety, however, they scored extremely severe level in stress. This finding is in line with the study of [9] which stated that the factor of academic performance expectation, career and social relations affecting the level of anxiety. This situation cannot be taken lightly because it will affected students' performance and achievement directly. High expectation in academic performance may lead to the negative impact on the students, and this is in line with [10] findings. In addition, according to [10] anxiety among students are caused by physical and health disorders, financial problems, family problems, educational problems, relationship problems with teachers and peers. Surprisingly, many students experiencing stress issue are at extremely severe level. This may due to the students themselves are unable to manage stress especially during the due date to submit assignment or test.

The findings also found that there is a moderate level of teachers' implementation in mental health elements during teaching & learning. However, the stress level of the students is at the extremely severe level compared to the elements of anxiety and depression. The problem of stress of students should be given full attention compare to another two mental health elements. This situation happen may due to some students perceive that teachers do not play an important role in addressing mental health problems but it is the responsibility of counselling teacher. Additionally, teachers may be less aware of mental health problems than students' academic achievement. Furthermore, teachers always send students with mental health problems to counselling teacher. Therefore, teachers should need to take action and circumstance into consideration if they really concern students' achievement regardless cognitive, psychomotor and affective.

Moreover, this study found that there is a significant relationship between the mental health level and the level of academic achievement based on Average Grade Cumulative Value (CGPA). According to [11], stress or anxiety will affect academic achievement, emotional, physical health and the idea of suicide. Additionally, extreme academic burdens can increase stress among students as they are urged to achieve academic excellence to enable them to gain status in the community. In addition, to get good results, students compete with each other in exams, tests or assignments. Therefore, such competition must be implemented in a healthy manner so that the students do not fall in the level of depression, anxiety or stress.

Furthermore, no significant difference was found in mental health problem among the students with difference years of study. However, mean score of year one students is higher than year two and year three. Year one students tend to have high level in mental health, especially stress compare to year two and year three. This is likely because first-year students are new students entering in vocational colleges with different learning environment compare to secondary school. At the beginning of the semester of study in vocational colleges, the first year students have been given theoretically challenging assignments and at the same time, they need to complete and competence in practical practice such as electrical wiring training, motor control training, electric machine training and so on. This can cause students who enrol in electrical engineering discipline feel stressed and anxieties compare to their previous school life.

In spite of this, this study reports that there is no significant difference in mental health problem from the aspect of gender and urban/rural students. However, analysis shows that male mental health score is higher than that of female students. This statement is contrary to the findings of [12], saying that male students lack in mental health problems as males are more likely to seek mental health service

than females. Furthermore, many students from engineering courses are usually monopolized by male because the nature of this field is challenging, tough to learn and the various pressures that must be faced [13]. Findings of [14] revealed that there were no stress differences between male and female students as stress affects academic achievement, disappointment, physical health and suicidal ideas. Often, mental health problems among rural respondents may be due to factors such as financial factors, factors of life events and lack of knowledge about awareness of mental health problems. Nevertheless, these factors are not only happened in rural areas but people in urban areas are also experiencing similar problems. The Health Ministry study in 2015 shows that about 300,000 out of 1.2 million rural and urban residents in Kelantan state have mental health problems due to various stresses. [15] stated that most of the problem or causes of stress including drug symptoms, depression, family problems and rising cost of living that burdening the people.

5. Conclusion

In summary, the level of mental health among electrical engineering students in three vocational colleges is at moderate level. However there are also some students who suffer from mental health problems at severe and severe levels. Most of the first-year students are more likely to have depression, anxiety and stress problems than the second and third year. This findings show that the mental health level of the student should be addressed seriously so that the students are able to deal with their mental health problem. All parties like Ministry of Education, Ministry of Health, Vocational Colleges Principals, teachers even the community and parents should work together to prevent students from suffering mental health in order to produce competitive human capital, excel in personal and academic achievement as well as holistic in terms of physical, emotional, spiritual, intellectual, and social. On the other hand, students need to identify their mental health level and apply the appropriate methods to address mental health problems through proper channels. Further studies should be conducted by evaluating the most effective intervention programs in preventing students' mental health problems. For example, using apps or "Hello, are you OK" campaign and so on.

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