



Prevalence and Characteristics of Depressive Symptoms in University Students in Melaka, Malaysia: A Cross-Sectional Study

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Authors' contributions

This work was carried out in collaboration between all authors. Authors CYT and TJR have contributed in conception and design of the study. Authors CYT, TJR, MRMS, LNS and KVJ participated in acquisition of data, analysis and interpretation of data. Authors CYT, TJR, MRMS, LNS and KVJ and drafted the manuscript. All authors contributed to revise it critically. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To determine the prevalence and evaluate the specific characteristics of depressive symptoms in medical, law and pre-university students, as well as to perform an exploratory analysis to survey the relationships of depression with several risk factors.

Study Design: An analytical cross sectional study was conducted on medical, law and pre-university students of two private institutions in Melaka, Malaysia.

Place and Duration of Study: Melaka, Malaysia, between September and October 2014.

Methodology: A total of 376 students participated in this study (MBBS= 142, Law= 129, Pre-U=105). They completed self-administered questionnaires which included socio-demographic questions and the Beck Depression Inventory (BDI) survey. Each item in the BDI can be further divided into 3 clusters: Affective, cognitive and somatic. Statistical analysis was performed using post-hoc test for multiple comparisons and multiple logistic regression.

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Results: There were 162 (43.1%) students with depressive symptoms ($BDI > 9$). Law students were found to be more depressed with the highest mean BDI score (11.7 ± 8.7) compared to MBBS (8.4 ± 8.1) and pre-university students (8.9 ± 6.8). Affective, cognitive and somatic clusters were significantly higher among law students. For exploratory analysis of risk factors, law students and those staying in hostel were significantly more likely to develop depressive symptoms.

Conclusion: There is high prevalence of depressive symptoms among law, medical and pre-university students. If detected early, students with depressive symptoms may be successfully managed with behavioral therapy, emotional support and interpersonal psychotherapy.

Keywords: Depressive symptoms; university students; prevalence; cross sectional study.

1. INTRODUCTION

Depression is an emerging public health problem [1]. According to the Diagnostic and Statistics Manual of Mental Disorders V (DSM V), depression is characterized by the presence of five or more symptoms for a period of two weeks and represent a change from previous functioning, with at least one of the symptom being depressed mood or loss of interest or pleasure [2]. Other symptoms include significant weight loss when not dieting or weight gain, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue, feelings of worthlessness or guilt, inability to concentrate and recurrent thoughts of death or suicide.

Depressive disorder is one of the most common mental disorders with an estimated 350 million people affected worldwide [3]. The prevalence of depression varies from western countries 21% to 6.5% in asia [4]. In Malaysia, national surveys showed that the prevalence of mental health problems had increased from 10.7% in 1996 [5] to 11.2% in 2006. [6] In a recent national survey, National Health Morbidity Survey IV (NHMS IV) in 2011 showed that the prevalence of lifetime depression was 2.4% and current depression was only 1.8% [7]. In Malaysia, a pilot study was performed among undergraduate students in private institution, Kedah which revealed that 56.60% of students were depressed. [8] depressive symptoms are highly prevalent among medical students. Many studies have shown that medical students are more prone to develop depression during their undergraduate years [9-13] and this can be associated to disablement in the development of academic, professional and social skills [14-17]. Stressful medical training is one of the factors for the development of depression [18] and personal behavioral problems like drug and alcohol abuse. [19,20] Studies show that first semester medical students who are just exposed to medical education had significant changes in their daily

habits [21,22]. Other factors which may cause the development of depression among medical students are competitive environments, work overload, dealing with significant life events like dying and death, performing clinical examinations on patients, [23] fear of acquiring disease, harassment and bullying, medical hierarchies, [24-26] ethical issues and constant pressure of assessment and examination.

On the other hand, law students had emotional distress too. Emotionally abusive situations that frequently faced by law students are humiliation, lack of control and isolation [27]. Several studies conducted specifically to compare medical students with law students have observed that law students report higher perceived stress scores, greater depression and anger, and lower contentment and feelings of friendliness [28] than do medical students (particularly with regard to academic, time, fear of failure, classroom and economic stress) [29,30]. In Malaysia, many cases have been reported on law students who have attempted or committed suicide [31-33].

Pre-university students are also prone to develop depression as shown in several studies [34-38]. Adolescence, which is the transitional period from childhood to adulthood, is a stage of emotional instability making them vulnerable to depression [39]. In adolescence, this may be a part of the developmental process, resulting from the giving up of childlike security in the drive for separation and independence [40]. Above all, there is also a danger of students picking up habits like usage of substances of abuse to get over depression. Major depressive disorder is also found to be a leading cause of youth suicidal behavior and suicide [41].

Other than the courses, factors that can contribute to the development of depression among undergraduate students include information overload, financial problems, lack of leisure time, and pressure of career choices

[42,43]. Others factor that can lead to depression, which are not related to academics, were female gender, [44] low family income, high level of father's education level, [45] having a family history of depression, [45,46] substance abuse, [46,47] and loss of close relatives in the past year.

There is few information regarding the prevalence of depression among law and medical students in Malaysia. Even though there is an abundance of published studies [9-13,27-30] regarding the presence of depressive symptoms among medical and law students, no one have ever compared the prevalence of depression among students in these programs in recent years in Malaysia [48]. The definition of depression and the criteria for its diagnosis as a clinical syndrome (which comprises of affective, cognitive and somatic symptoms) are reflected in the content of the items in Beck Depression Inventory (BDI). According to Beck, cognition with "ideational content that emphasizes loss or deprivation are the essential qualities of the state of depression" [49] and "automatic thoughts and images of loss and failure dominate the stream of consciousness" [50]. These signify that cognitive and affective manifestations of depression are the most essential defining characteristics of depressive disorders. In particular, there are two main opinions on the weight of somatic symptoms as to whether they should be considered as a mood disorder [51] or whether they are just a secondary expression of the underlying illness itself [52,53]. Several studies agreed on dividing BDI into three different clusters to better aid in the diagnosis of depression [54,55]. In fact, examined the specific pattern of depressive symptoms in cognitive, somatic and affective dimensions in university students can provide us a better knowledge and understanding of the symptoms involved in the depression. This could assist in the development of more specific target programs, thus helping professors and educators to better understand and identify students at risk.

Therefore, our study aims to determine the prevalence and specific characteristics of the depressive symptoms in medical, law and pre-university students, as well as to perform an exploratory analysis to survey the relationships of depression with several risk factors. We assume that the type of courses will have an association with students getting depression and there will be a variation between specific characteristic

symptoms among MBBS, law and pre-university students.

2. MATERIALS AND METHODS

A cross sectional study was conducted to determine the characteristics of depressive symptoms among medical, law and pre-university students in two private institution in Melaka, Malaysia from September to October 2014. This study includes law, medical and pre-university students. Pre-university students are students who are taking science courses that are pre-requisites for entering the MBBS program. A minimum sample size of 362 participants was obtained by using the following formula [56]:

$$n = \frac{Z^2_{1-\frac{\alpha}{2}} X p(1-p)}{d^2}$$

n=sample size

Where $Z^2_{1-\alpha/2}$ is type 1 error which is 1.96, p is expected prevalence or proportion which was 38.2% [57], d is desired width of the confidence interval which is 5%.

A multistage sampling method was used to select the number of samples in each course. A total of 450 questionnaires were prepared and distributed to students in the three different programs. For the law course, second and final year students were randomly selected, for the mbbs course, fourth and final year students were selected, and lastly for pre-university students, two groups were randomly selected. After random selection of the batches of students, we obtained the list of students in those batches and simple random sampling was done by computer generated random digit number. Any student who did not return or fill up the questionnaire was considered a "non-response". The total number of students who responded was 376 (83.56%), which comprised mbbs (n=142, 37.8%), law (n=129, 34.3%) and pre-u (n=105, 27.9%).

Data were collected using a validated questionnaire evaluating socio-demographic information (age, course, gender, ethnicity, scholarship, housing, medical problems, alcohol consumption and smoking) and the beck depression inventory (bdi) [58].

The presence of depressive symptoms among medical, law and pre-university students was

assessed using the beck depression inventory (bdi) [58], a 21-item self-report inventory designed to measure the severity of depressive symptomatology. For the bdi, the answers were dichotomized into the absence and presence of major depressive symptoms. The cut-off points for the bdi were as follows: None (0–9), mild (10–18), moderate (19–29), and severe (30–63). Mild, moderate and severe depression were categorized as having depression whereas bdi scores less than 9 is considered not having depression. For our research, the cronbach alpha coefficient of bdi is 0.896 which shows high reliability whereas the face and content validity of our questionnaires are checked by experts.

Cluster analysis can also be useful in presenting the particularities of depressive symptoms in a more differentiated manner than the total BDI score alone would permit [57]. Cluster analysis arranges the elements of the analysis into appropriate mutually exclusive subset so that a more straightforward interpretation can be accomplished when the analysis is successful. The first factor, affective cluster (the total of scores on questions 1, 4, 10, 11, and 12 from the BDI), symbolizes the core symptoms of a depressive mood, based on the following symptoms: 1, sadness; 4, self-dissatisfaction; 10, crying; 11, irritability; and 12, social withdrawal. The second factor, cognitive cluster (questions 2, 3, 5, 6, 7, 8, 9, 13, 14, and 20), evaluates the following cognitive aspects: 2, pessimism; 3, sense of failure; 5, guilt; 6, punishment; 7, self-dislike; 8, self-accusation; 9, suicidal ideas; 13, indecisiveness; 14, body image change; and 20, somatic preoccupation. The third factor, somatic cluster (questions 15, 16, 17, 18, 19, and 21), evaluates the presence of the following symptoms: 15, work difficulty; 16, insomnia; 17, fatigability; 18, loss of appetite; 19, loss of weight; and 21, loss of libido. Furthermore, cluster scores were computed as the means across all questions assigned to a particular cluster (the mean was given predilection over the total of the individual question scores to account for differences in the number of questions per cluster). The possible score for each of these clusters were as follows: Affective cluster, a range of 0–15; cognitive cluster, a range of 0–30; and somatic cluster, a range of 0–18 [57].

All the samples were taken after obtaining written informed consent and all the participants took part voluntarily. The questionnaires were anonymous and confidentiality was assured. The study protocol was reviewed and approved by

research committee faculty of medicine of Melaka Manipal Medical College (MMMM), Melaka, Malaysia.

2.1 Statistical Analysis

The data was recorded and processed using Microsoft Excel, and accuracy was checked. Statistical analyses were performed using Epi-info 7.1.4.0 and SPSS software version 12. Data were analyzed using descriptive and inferential statistics and presented in tables. For continuous variables, descriptive statistics like mean with standard deviation were calculated. For categorical variables, frequencies along with percentages were calculated. For each of the courses, the level of depressive symptoms was classified based on the BDI score into no depressive symptoms, mild, moderate and severe depressive symptoms and was presented in frequency along with percentages. Between group comparisons of total BDI and cluster of depressive symptoms in three different courses (MBBS, Law and Pre-U), post hoc multiple comparisons, bonferroni adjustment was used. In order to verify the relationship of socio-demographic variables and depression, initially bivariate analysis was done. Those factors with p value less than 0.1 were then subjected to multivariate analysis. Multiple logistic regression was used, and the level of significance was set at 0.05.

3. RESULTS

3.1 Investigation of Depressive Symptoms among MBBS, Law and Pre-U Students

Table 1 shows the severity of depression among students in the three courses (MBBS, Law and Pre-U) and in the total sample. Based on the BDI cut-off points, 162 students (43.1%) from our total sample of 376 had depressive symptoms: (mild, n=95 [25.3%]; moderate, n=55 [14.6%]; and severe n=12 [3.2%]). The prevalence of depressive symptoms among MBBS students was 35.9% (mild depression, n=30 [21.1%]; moderate depression, n=17 [12.0%]; and severe depression, n=4 [2.8%]). Among law students, the prevalence of depressive symptoms was 54.3% (mild depression, n= 42 [32.6%]; moderate depression, n=20 [15.5%]; and severe depression, n=8 [6.2%]). Lastly, among pre-university students, the prevalence of depressive symptoms was 39.0% (mild depression, n= 23

[21.9%], moderate depression, n=18 [17.1%], there was no report of severe depressive symptoms among pre-university students). Fig. 1 illustrates the prevalence of depression among students in the three courses.

3.2 Study Samples and Exploratory Preliminary Investigation of the Possible Risk Factors for Depression among Students

Of the 376 students participating in the study, the mean age was 21.3 years (range, 17-27 years); 66% were female, 50.8% were Chinese, 25.5% had scholarship, 7.2% had medical problem, 52.4% was living in hostel, 25.4% had alcohol drinking and 2.9% smokes.

In MBBS course, there were 142 students with the following characteristics: The mean age was 23.6 years (range, 22-27 years); 53.5% were female, 45.8% were Chinese, 57.0% had scholarship; 50.0% was living in hostel, 28.9% had alcohol drinking habit, 4.2% smoke and 6.3% had medical problem.

In law course, there were 129 students with the following characteristics: The mean age was 21.2 years (range, 19-26 years); 76.0% were female, 63.6% were Chinese, 11.6% had scholarship, 27.1% was living in hostel, 25.6% had alcohol drinking, 3.1% smoke, 7.8% had medical problem.

Finally, in pre-university course, there were 105 students with the following characteristics: the mean age was 18.2 years (range, 17-20 years); 70.5% were female; 47.6% were Indian, none of them had scholarship; 86.7% was living in hostel, 20.0% had alcohol drinking, 1.0% smoke and 7.6% had medical problem.

Bivariate analysis (chi square) was done first to analyze the relationship of socio-demographic variables in the development of depressive symptoms. Chi square showed that the significant socio-demographic characteristics were courses, gender, housing, scholarship and medical problem. All these factors were then analyzed using multiple logistic regression. Besides that, other variables like age, ethnicity, smoking and alcohol consumption were also included in regression analysis because those factors were also associated with depressive symptoms based on our literature review. Table 2 shows the relationship between socio-demographic characteristics with depression. Compared with law course, MBBS (Adjusted OR 0.39, 95% CI 0.16-0.93 [p=0.033]) and pre-university students (Adjusted OR 0.32, 95% CI 0.13-0.79 [p=0.013]) are less likely to develop depression. Students living in hostel (Adjusted OR 2.36, 95% CI 1.21-4.60 [p=0.011]) are more likely to develop depression compare to those staying outside with friends. However, other variables like age, gender, ethnicity, scholarship, medical problems, smoking and alcohol consumption did not exhibit significant association with depression.

3.3 Cluster Analysis of Depressive Symptoms among Medical, Law and Pre-University (Pre-U) Students

Table 3 shows the mean BDI scores in MBBS, Law and Pre-U. The mean BDI scores for each courses were as follows: MBBS (8.4±8.1); Law (11.7±8.7); Pre-U (8.9±6.8). Post hoc tests with multiple comparison showed that there were significant differences between the Law in compared to both MBBS (p=0.002) and Pre-U (p=0.023), but there was no significant difference between Pre-U and MBBS (p=1.00).

Table 1. Depression among MBBS, law, pre-university students (n=376)

Depression severity	MBBS	Law	Pre-university	Total
	N (%)	N (%)	N (%)	N (%)
None	91 (64.1)	59 (45.7)	64 (61.0)	214 (56.9)
Mild	30 (21.1)	42 (32.6)	23 (21.9)	95 (25.3)
Moderate	17 (12.0)	20 (15.5)	18 (17.1)	55 (14.6)
Severe	4 (2.8)	8 (6.2)	0 (0.0)	12 (3.2)

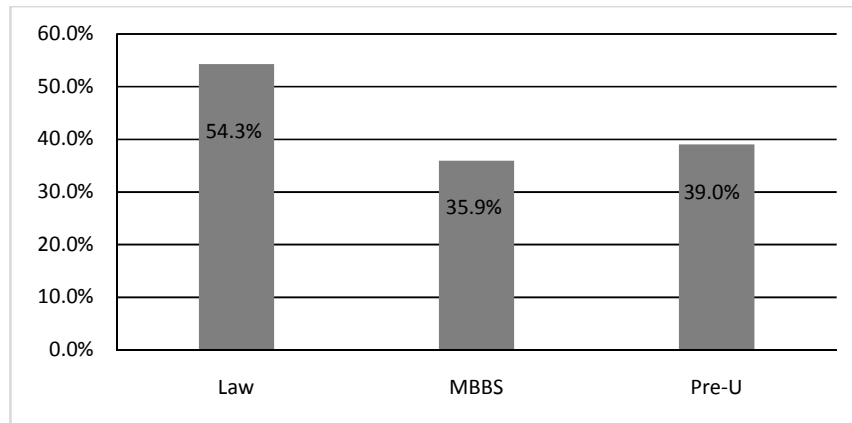


Fig. 1. Prevalence of depression among law, medical and pre-u students, (%)

Table 2. Relationship between socio-demographic characteristics with depression

	Total	Depression, n (%)		Adjusted odds ratio (95%Confidence Interval)	P-value
	N(%)	Yes	No		
Course					
Law	129 (34.3)	70 (54.3)	59 (45.7)	1 (ref)	
MBBS	142 (37.8)	51 (35.9)	91 (64.1)	0.39(0.16-0.93)	0.033
Pre-University	105 (27.9)	41 (39.0)	64 (61.0)	0.32(0.13-0.79)	0.013
Age (years)					
17-20	157 (41.8)	71 (45.2)	86 (54.8)	1 (ref)	
21-23	129 (34.3)	53 (41.1)	76 (58.9)	0.75(0.33-1.73)	0.511
24-27	90 (23.9)	38 (42.2)	52 (57.8)	2.21(0.72-6.79)	0.168
Mean (SD)	21.3(2.4)				
Gender					
Female	248 (66.0)	116 (46.8)	132 (53.2)	1 (ref)	0.161
Male	128 (34.0)	46(35.9)	82(64.1)	1.46 (0.86-2.46)	
Ethnicity					
Chinese	191 (50.8)	88 (46.1)	103 (53.9)	1 (ref)	
Malay	82 (21.5)	32(39.0)	50(61.0)	4.32(0.45-41.83)	0.206
Indian	94 (25.0)	38 (40.4)	56 (59.6)	2.07(0.26-16.31)	0.491
Others	9 (2.4)	4 (44.4)	5 (55.6)	3.73(0.26-53.39)	0.332
Housing					
Living outside with friends	111 (29.5)	36 (32.4)	75 (67.6)	1 (ref)	
Hostel	197 (52.4)	90 (45.7)	107 (54.3)	2.36(1.21-4.60)	0.011
Living outside alone	25 (6.6)	14 (56.0)	11 (44.0)	2.21(0.78-6.28)	0.136
Living outside with family	43 (11.4)	22 (51.2)	21 (48.8)	2.12(0.89-5.02)	0.089
Scholarship					
Yes	96 (25.5)	33 (34.4)	63 (65.6)	1 (ref)	0.056
No	280 (74.5)	129 (46.1)	151 (53.9)	2.44(0.98-6.08)	
Medical problem					
Yes	27 (7.2)	17 (63.0)	10 (37.0)	1 (ref)	0.052
No	349 (92.8)	145 (41.5)	204 (58.5)	0.40(0.16-1.00)	
Alcohol consumption					
Yes	95 (25.3)	41 (43.2)	54 (56.8)	1 (ref)	0.453
No	281 (74.7)	121 (43.1)	160 (56.9)	1.26(0.69-2.28)	
Smoking					
Yes	11 (2.9)	5 (45.5)	6 (54.5)	1 (ref)	0.853
No	365 (97.1)	157 (43.0)	208 (57.0)	0.85 (0.19-3.83)	

Table 3. Cluster analysis of depressive symptoms assessed by beck depression inventory scores among MBBS, law and pre-U students. (n=376)

Depression Clusters	MBBS	Law	Pre-university	Comparison group	Post hoc P-value
	Mean (SD)	Mean (SD)	Mean (SD)		
Affective	2.4(2.5)	3.3(2.8)	2.2(2.2)	MBBS vs Law	0.022
				Law vs Pre-U	0.003
				Pre-U vs MBBS	1.000
Cognitive	3.9(4.1)	5.3(4.5)	4.3(3.7)	MBBS vs Law	0.021
				Law vs Pre-U	0.207
				Pre-U vs MBBS	1.000
Somatic	2.0(2.2)	3.2(2.3)	2.5(2.0)	MBBS vs Law	0.000
				Law vs Pre-U	0.042
				Pre-U vs MBBS	0.321
Total BDI	8.4(8.1)	11.7(8.7)	8.9(6.8)	MBBS vs Law	0.002
				Law vs Pre-U	0.023
				Pre-U vs MBBS	1.000

For affective cluster, the mean scores for MBBS, Law and Pre-U were as follows 2.4±2.5, 3.3±2.8, 2.2±2.2. Post hoc tests showed that there were significant differences between Law and MBBS (p=0.022) and between Law and Pre-U (p=0.003), but there was no significant difference between Pre-U and MBBS (p=1.00). For cognitive cluster, the mean scores for MBBS, Law and Pre-U are 3.9±4.1, 5.3±4.5, 4.3±3.7 respectively. There was a significant difference between Law and MBBS (p=0.021), however there was no significant difference between Law and Pre-U (p=0.207) and Pre-U and MBBS (p=1.00). Lastly, for somatic cluster, the mean scores for MBBS, Law and Pre-U were 2.0±2.2, 3.2±2.3, 2.5±2.0 respectively. Post hoc tests showed that there were significant differences between law and MBBS (p=0.000) and between law and pre-u (p=0.042) but there was no significant difference between Pre-U and MBBS (p=0.321).

4. DISCUSSION

This is the first cross sectional study that directly evaluates the characteristics of depressive symptoms by applying clusters in Malaysia. The prevalence of depressive symptoms in our students was 43.1% where it is relatively higher compared to undergraduate students in overseas institutions ranging from 27.9% to 38.2% [57,59,60], however lower compared to students in a private institution, Kedah which revealed that 56.60% [8] of students were depressed. Nevertheless, the prevalence was still much higher compared to the prevalence of Malaysian general population which showed that the

prevalence of lifetime depression ranging from 1.8% to 2.4% [7].

In current study, BDI was chosen by us for the screening of depressive symptoms among the students because one study found out that it has 97% sensitivity and 99% specificity [61]. Although it is not a diagnostic tool for depression, several studies has shown the usefulness in measuring depression and is concluded as a reliable and valid instrument for detecting depression in non-clinical setting [62].

Higher total BDI scores in law (11.7±8.7) were observed. The total BDI scores were lower in MBBS (8.4±8.1) and Pre-U (8.9±6.8). The higher total BDI scores in law are probably due to students thrust into an unfamiliar environment in which predominant Socratic teaching method undermine self-esteem, [63] lack of feedback, lack of educational context in the learning process and the reliance of class rank as an evaluation and hiring tool [64].

Cluster analysis was used empirically to sort the symptom profiles of participants of this study [57]. The clusters analysis revealed that the main cluster was the affective cluster, which assesses the core symptoms of mood disorders, namely sadness, crying, lack of pleasure, losing interest in people, and irritability. This was significantly different between students in law and both MBBS (p=0.002) and Pre-U (p=0.023), with the higher score in Law followed by Pre-U and MBBS. This might be due to law students' frequent fear of failure in an atmosphere of intensive competition [65]. The cognitive cluster, which included aspects of failure, hopelessness, self-

punishment, criticism, indecision, self-blame, somatic worrying, guilt and self-appearance was also significantly higher in the Law than MBBS ($p=0.021$), probably would be associated to teaching method as the students are singled out and questioned extensively in front of the class. Medical students usually have the fear of "not knowing anything", [66] and are anxious and afraid about the physical examination of another human beings [67]. Lastly, the somatic cluster denotes to tiredness, insomnia, [68] appetite loss, [69] weight loss and loss of libido, therefore it is not surprising that, in law students, the somatic scores were significantly higher compared to MBBS ($p=0.000$) and Pre-U ($p=0.042$) as law students were always to report drinking too much, having trouble sleeping, diminished functioning, and loss of appetite [56]. These high levels of emotional symptoms maybe associated emotionally abusive in law students [70]. Somatic cluster was also affected in medical students reflecting that the night postings, devoid of family and friends support, encountering the death of patients, without sleeping, with reduced time of leisure activities [71,72], and uncertainty and worry regarding the future and university exams might be the factors. On the other hand, pre-university students who had just graduated from secondary school might find difficulty in adapting to a completely new learning environment, and stressful and competitive situations. Being a pre-university student might also be associated with negative feelings, like insecurity and fear, related to get themselves qualified into medical course.

After applying regression analysis, there are two factors that were significantly associated with depression: Courses and housing. Based on our study, students living in hostel ($p=0.011$) are more likely to develop depression compared to students living outside with friends. A study that was conducted in India showed that there is a significant positive correlation between loneliness and depression. Students living in hostel alone are more likely to develop depression, this can be due to the loneliness they may be experiencing, as they have than been reported to be less happy, less satisfied and more pessimistic [73]. Students staying with friends are less likely to develop depression because they can share their problems with their friends and adapt to stressful environments more easily.

The present study showed there was no significant difference in acquiring depression between males and females, which is contrary to

the well-known notion that depression is more common in women in general. Other studies have suggested that females are more liable to depression because females are more likely to adapt with distress feeling through emotion-focused compared to problem-focused where most of emotion-focused coping measure do not help to reduce distress feeling [74-75]. We also failed to establish the relationship between smoking and depression. First, in agreement with our research, there are other studies that also failed to find an association between smoking and depression [76-77] stating that it is possible that the nicotine was effective as self-medication for the depressed mood, hence resulting in elevation of mood in the depressed smokers [77]. But in our opinion, the contrast of the results in our study as compared to other studies reporting there is significant association in this may be due to the relatively smaller sample size of smokers in our study which is 2.9% in relation to the total study population. Similarly, 66% of our total study population are females; and considering the fact that females are less likely to smoke compared to males [78] the larger sample size of females may cause the results to be not significant.

We also found no difference in depression with alcohol consumption. Several other studies have also reported similar findings [79]. However, some studies have reported conflicting observations that consuming 1 or 2 drinks daily decreased, whereas the consumption of more than 6 drinks per day doubled the risk of depression. These results suggest that use of alcohol does not directly cause or prevent depression [79]. Our study also showed that there was no association between ethnicity and depressive symptoms in which similar results was also obtained in the previous study done among final year medical students in a local university in Penang [74]. However, a study done on correlation of depression, anxiety, and stress among Malaysian university students have shown significant association between ethnicity and stress with Malay and Chinese students scored significantly higher than students from other ethnicity [80]. In addition, variation in age also has no direct implication for developing depressive symptoms in our study. Nevertheless, other studies have proven otherwise showing that depression is more likely to occur in older age groups (>25 years old) rather than adolescence (15-21 years old). One such reason may be students are concern regarding their future, fear of failure, increase workload and

limited leisure time especially during their final years [80].

4.1 Strength

Since our study is a cross sectional study which requires only one time participation from the respondents and we keep the questionnaire anonymous, hence we have high respondent rates. Besides that, we are able to determine the prevalence of depression among the three different courses through cross sectional study. In addition, we are using Beck Depression Inventory as a screening tool for depressive symptoms which has high sensitivity and specificity.

5. LIMITATION

Since our study is a cross sectional study, the cause and consequences are measured at the same point in time, it is not possible to establish the causal relationship. Besides that, there is a behavioral change among students as time progresses hence, the results obtained may be less accurate. The use of self-administered questionnaire is the most effective way to carry out large-scale surveys. However, it is associated with bias of maximizing or minimizing the depressive symptoms, so the prevalence may be less accurate than that determined by clinical diagnosis or structural interview. Lastly, we did not collect data from the students who were absent during our data collection day.

6. RECOMMENDATION

Medical illness can have a negative impact on learning and cognitive development and has a high cost to individual and society such as college dropouts, suicides, poor relationship with friends and impaired ability to work effectively. Hence, the challenge to the college is to promote student well-being and provide students with information regarding stress management and coping skills. They should incorporate more leisure activities in the curriculum, promote better interaction between the students and faculty, have advisory services, psychiatric counseling, peer group counseling on the campus and also promoter habilitation programs for students with moderate to severe depression. Students should also address and maintain their own mental, physical, and spiritual health to make it a lifelong success.

7. CONCLUSION

Our study showed that the prevalence of depressive symptoms was very high among university students. From our sample, the prevalence of depressive symptoms among law students was 54.3%, for MBBS students it was 35.9% and for pre-university students, 39.0%. The overall prevalence of depressive symptoms in our sample was 43.1% which is relatively higher compared to the general populations (2.4%). Law students are more likely to develop depression compared to MBBS and Pre-U students. Students living in hostel are more likely to develop depression compared to those staying outside with friends. If detected early, students with depressive symptoms may be managed successfully by behavioral therapy, emotional support and interpersonal psychotherapy.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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