



# INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES



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ISSN: 2222-6990

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To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v12-i12/16018> DOI:10.6007/IJARBSS/v12-i12/16018

**Received:** 16 October 2022, **Revised:** 20 November 2022, **Accepted:** 06 December 2022

**Published Online:** 23 December 2022

**In-Text Citation:** (Lubaton & Madon, 2022)

**To Cite this Article:** Lubaton, C., & Madon, Z. (2022). Predictor of Depressive Symptoms among Foundation Students in Universiti Putra Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 12(12), 2258–2268.

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Vol. 12, No. 12, 2022, Pg. 2258–2268

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## Predictor of Depressive Symptoms among Foundation Students in Universiti Putra Malaysia

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### Abstract

This study examines the main factor of depressive symptoms among foundation students in Universiti Putra Malaysia. Through the cluster sampling technique, 345 students were involved in this study. The foundation students were assessed by a set of self-administered questionnaires of Sleep Quality Scale (Hyeryeon Yi, Kyungrim Shin & Chol Shin, 2006), Educational Stress Scale for Adolescent (Sun, Jiandong, Dunne, Michael, Hou, Xiang-Yu, Xu & Ai-qiang, 2011), Multidimensional Scale of Perceived Social Support (Zimet et al., 1988) and The Beck Depression Inventory-II (Beck, 1961). The results revealed that academic stress is prominent in predicting depressive symptoms among foundation students ( $\beta = 0.403$ ,  $p = 0.000$ ). The results of this study proved the transitions from high schools to tertiary institutions had challenged the foundation students to adapt to the new academic grading, projects and assignments, and lifestyle. It is suggested that foundation students need to master their time management to avoid unnecessary stressors. To generalize these findings, future studies should consider a larger sample size comprising foundation students from public and private universities to improve the accuracy and reliability of the result and provide more significant generalizations.

**Keywords:** Depressive Symptoms, Foundation Students, Sleep Quality, Academic Stress, Perceived Social Support

### Background

Minimum one year of pre-school, six years of primary schools, three years of lower secondary schools, and two years of upper secondary schools and end up with a total of 12 years of schooling are the journey of Malaysian's students (Low, n.d.). By the end of their second year in upper secondary schools, the students in Malaysia will sit for their Malaysian's Certificate of Education (SPM) examinations that will eventually let them eligible for registering in the tertiary education whether in private or public universities and colleges. This is how educational systems works in Malaysia.

The transition from high schools to tertiary education is such a challenging transition to become an independent university student. These challenges include adaptation of college life, adjustments in relationship with friend, adjustments in sleep patterns, homes and family, as well as the educational systems of their academic calendars as per their universities. Asif

et al (2020) suggested that most of newly registered college students used to face more stressful circumstances such as additional challenging syllabus lessons, challenging assignments and projects, living independently in the hostels, and away from their family members. These challenges must be addressed effectively to avoid unnecessary stress or depression during their studies journey. As education moves to a higher level, the stressors become higher.

A study on Pakistan university students reported that 75% students suffered from depression and among them there were 8.6% of students were suffering extremely severe depression, while there were 88.4% students were suffered from anxiety, and 84.4% were suffering from stress (Asif et al., 2020). In a sample of university students in Brazil, there were reported that male students are highly impacted with mild depressive symptoms compared to female university students, but both male and female of that university students shows the same level of anxiety test score (Pelucio et al., 2022). In addition, in Mexico, the sample students from University in Guadalajara presented that a risk of 61.5% for the students to experience a possible depressive disorder and 52.1% of the students in a risk of anxiety (Barbosa-Camacho et al., 2022).

According to Asif et al (2020) Asian countries such as China, Japan, and India were reported to suffer more depression compared to the students in the other countries. A sample study of university in China showed that there is a statistically positive relationship between psychological distress and perceived stress that risked the nursing students to experienced depression during their studies (Sun et al., 2022). In India, students from residents of a medical school reported to show a huge number of their students experienced burnout, 48.8%, and in risk of experience depression (Pokhrel et al., 2020). Further study investigated in Malaysia and found that there were 51.5% of the medical students' population experiencing depression with anxiety (85.1%) as the most prevalent among them (Fauzi et al., 2021). Based on the literature, it is expected that Asian university students in the medicine and nursing field to experience a high prevalence of depression.

Many published studies discussed the risk factors of depression on the performance of university students, and the prevalence of depression among medical, clinical, and nursing students. Still, the study did not emphasize which year of the students are mostly affected mainly by depression. To the best of our knowledge, most of the available research articles in the Scopus and Springer Link database, the prevalence of depression studies was mostly among medical and clinical students, undergraduates, or bachelor's students, which has caused the prevalence of depression among the foundation students to remain limited for further the studies. In furthering the current studies among the foundation students, this study aimed to further the area of research on psychological well-being and mental health, mainly depressive symptoms among the foundation students. Therefore, parallel to psychological well-being, the current study focuses on sleep quality among the foundation students in the university, academic stress during their studies, and perceived social support as they were away from family members.

## **Methodology**

### **Study Design, Setting, and Sample Size**

A cross-sectional quantitative study was carried out among the foundation student in the Foundation of Agricultural Science Centre, Universiti Putra Malaysia. The study's sample size was calculated using (Yamane's Formula, 1967). By using Cluster Sampling Technique, as illustrated in the figure 1, out of the given population of 874 foundation students which

consist of 298 male students and 576 female students (Academic Administration Department of the Centre of Foundation Studies for Agriculture Science, UPM), the minimum sample size required was 274 foundation students; below was the calculation to determine the sample size of this study. The sample size was increased by 10% to avoid errors in the data collection process; seven respondents were excluded from the studies due to outliers during the post-test analysis, and the final sample size comprised 338 foundation students.

$$n = \frac{N}{1 + N(e)^2}$$

$$n = \frac{874}{1 + 874(0.05)^2}$$

$$= 274.41 \approx 301 \text{ (after increase to 10\%)}$$

Where,

n = sample size

N = population size

e = sampling error (where the confidence level of 95%)

There were 20 groups of classes in the foundation centre. Each class consist of 40 to 45 students. Nine groups of classes were selected randomly by simple random sampling technique using the fishbowl method and group 3, 7, 4, 9, 11, 16,18, 19, and 20 were selected to participated in this study.

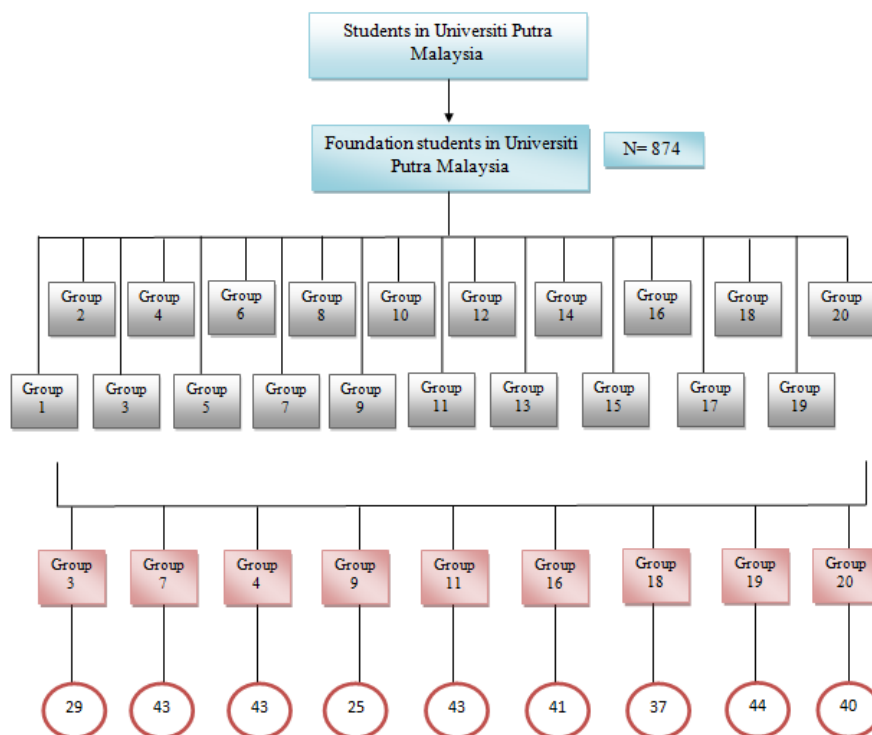


Figure 1: Cluster Sampling Technique of the Study

### Data Collection

The Foundation of Agricultural Science Centre permitted this study to carry out the self-administrative survey among the foundation students. A pilot test was carried out with 39 respondents within the Centre to test the score test of the scale questionnaire as in the table 1. During the actual study, a set of questionnaires was distributed through the group

representative selected from each class. Before distributing the questionnaire, briefing and objectives of this study were explained to the representative of each class, and before signing the informed consent form. The filled questionnaires were anonymous and were collected by the researchers upon completion. The data collection was done for four days and two months prior to their examination week to avoid any unnecessary additional stressors.

### Questionnaire

A four-sections questionnaire was used in this study, the first section includes the background information of the respondents such as gender and family income per month (RM), the second sections comprise of Sleep Quality Scale by Hyeryeon Yi, Kyungrim Shin and Chol Shin (2006) with Likert scale range from zero (rarely) to three (almost always), the third section is the 16 items of Educational Stress Scale for Adolescent by Sun, Jiandong, Dunne, Michael, Hou, Xiang-Yu, Xu and Ai-Qiang(2011), with Likert scale range from 1 (strongly disagree) to 5 (strongly agree), the fourth section is Multidimensional Scale of Perceived Social Support (MSPSS) a 12 items survey with Likert scale range from 1 (very strongly disagree) to 7 (very strongly agree) developed by Zimet et al (1988), and lastly is the fifth section a self-reporting questionnaire to evaluate the severity of depression symptoms named The Beck Depression Inventory II (BDI-II) developed by Aaron T. Beck in 1961, with Likert scale range from 0 (not at all) to 3 (exactly true).

The standardized questionnaire scores of the BDI-II were defined where 0 to 15 scores indicated normal or free from any depressive symptoms, scores obtained of 16 to 30 indicates mild depression symptoms, scores of 31 to 46 indicates moderate depression, and 47 to 63 obtained scores indicating a severe depression symptom.

The reliability of the scale are as follows,

Table 1

#### *Reliability Analysis of the Scale*

Variables	Instruments	No. of items	Reliability of the scale (Cronbach's Alpha Value)		
			Original	Pilot Test (n= 39)	Actual Study (n= 345)
Sleep Quality	SQS	28	0.92	0.834	0.771
Academic Stress	ESSA	16	0.81	0.835	0.876
Perceived Social Support	MSPSS	12	0.88	0.908	0.902
Depressive Symptoms	BDI-II	21	0.86	0.937	0.946

### Data Analysis

Data analyses were conducted using Statistical Package for Social Science (SPSS) Windows Version 26. Preliminary studies were run to examine missing values, coding errors, and any irrelevant values on the data view. The missing value in the data was filled in by the mean of the variables, carried out by the SPSS. Categorical data in section A (demographic) were presented as frequencies and percentages, while continuous data in section B to section E were reported as mean and standard deviation. Bivariate analyses between continuous

variables were carried out to examine the relationship between variables, and in multivariate analysis, multiple regression was performed to predict the dependent variables of this study.

## Results

### *Socio demographic characteristic of respondents*

Table 2

*Demographic Characteristics of Foundation Students in UPM (n=338)*

Variables	<i>n</i>	%
<b>Sex</b>		
Male	116	34.3
Female	219	64.8
Total	335	99.1
Missing	3	0.9
Total	338	100
<b>Family Income</b>		
RM 2000.00 and below	61	18
More than RM 2000.00 to RM 4000.00	52	15.4
More than RM 4000.00 to RM 6000.00	43	12.7
More than RM 6000.00 to RM 8000.00	28	8.3
More than RM 8000.00 to RM 10000.00	41	12.1
More than RM 10000.00 to RM 12000.00	41	12.1
More than RM 12000.00	60	17.8
Total	326	96.4
Missing	12	3.6
Total	338	100

The table 2 shows the total number of respondents that participated in this study came from a group of classes that varied from 25 students to 44 students. Each group has contributed 7.25% to 12.76% of the study population. There were 64.8% (n= 219) of the respondents in this study were female students, and 34.3% (n= 116) of the respondents in this study were male students, while there was 0.9% (n= 3) of missing data for the sex variables in this study.

From the table above, most of the students came from the household income that ranged between RM 2000.00 and below, 18% (n= 61) and from the household income that ranged more than RM 12000.00, 17.8% (n= 60). A total of 15.4% (n= 52) of the students came from the household income that ranged more than RM 2000.00 to RM 4000.00, 12.7% (n= 43) of the students came from the household income that ranged more than RM 4000.00 to RM 6000.00, 8.3% (n= 28) of the students came from the household income that ranged more than RM 6000.00 to RM 8000.00, 12.1% (n= 41) of the students came from the household income that ranged more than RM 8000.00 to RM 10000.00, 12.1% (n= 41) of the students come from the household income that ranged more than RM 10000.00 to RM 12000.00, , and lastly there was a missing data of 3.6% (n= 12) of the study population for the family income variable.

The respondents are fairly distributed to all type of background of the household group income where the data shows that a total of 33.4% (n=113) of the students came from the household group income of bottom 40% (B40), 33.1% (n=112) came from the household group of middle 40% (M40), and the remaining 29.9% (n=101) came from the household group of top 20% (T20).

### Level of Depressive Symptoms

Table 3

*Level of Depressive Symptoms among Foundation student, UPM (n=338)*

Level	<i>n</i>	%	Mean	<i>Sd.</i>	Min	Max
Depressive Symptoms			23.30	14.304	0	59
Free ( <15 )	121	35.8				
Mild ( 16-30 )	112	33.1				
Moderate ( 31-46 )	80	23.7				
Severe ( >47 )	25	7.4				
Total	338	100.0				

As shown by the level of depressive symptoms among foundation students in the table 3, about 35.8% of the students were free from the depressive symptoms while there were 33.1% of students suffered from mild depressive symptoms. Also, there were 23.7% of the students suffered from moderate depressive symptoms and about 7.4% percent of students were suffering from severe depressive symptoms. Hence, there were a total of 64.2% of 338 students that were showing depressive symptoms overall with the mean of 23.30 ( $\pm 14.304$ ).

Table 4

*Mean of depressive symptoms for male and female*

Variable	<i>n</i>		Mean		Variance	
	Male	Female	Male	Female	Male	Female
Depressive Symptoms	116	219	22.42	23.92	194.542	208.608

The mean for female and male students were tested for descriptive analysis and table 4 shows that the mean for male students was 22.42 (n= 116) and the mean for depressive symptoms among the female students was 23.92 (n= 219). The means between the two groups did not differ much and both male and female students were in the mild level of depressive symptoms.

**Predictor of Depression among Foundation Students**

Table 5  
*ANOVA Analysis for Regression Model*

	Sum Squares	of df	Mean Square	F	Sig.
Regression	28435.497	3	9478.499	78.139	.000 <sup>b</sup>
Residual	40515.323	334	121.303		
Total	68950.820	337			

Multiple linear regression was used to test if sleep quality, academic stress, and perceived social support significantly predicting depression symptoms among the foundation students. The overall regression was statistically significant and fitted the regression model where  $F(3,334) = 78.139$ ,  $p = 0.000$  as shown above in the table 5.

Table 6 shows the correlation between the variables where there are statistically significant relationships between all the tested variables and depressive symptoms and table 7 shows the result in predicting the depressive symptoms of sleep quality ( $\beta = 0.258$ ,  $p = 0.000$ ), academic stress ( $\beta = 0.403$ ,  $p = 0.000$ ) and perceived social support ( $\beta = -0.289$ ,  $p = 0.000$ ).

Table 6  
*Correlation of Sleep Quality and Depressive Symptoms (n=338)*

Variables	Depressive Symptoms	
	<i>r</i>	<i>p</i>
Sleep Quality	0.436***	0.000
Academic Stress	0.501***	0.000
Perceived Social Support	-0.340***	0.000

Note. \*\*\* Correlation is significant at the 0.001 level (2-tailed)

Table 7  
*Multiple Linear Regressions Analysis of Depressive Symptoms (n= 338)*

Variables	Depressive Symptoms			
	<i>B</i>	<i>SE.B</i>	<i>Beta, <math>\beta</math></i>	<i>p</i>
Sleep Quality	0.411	0.072	0.258***	0.000
Academic Stress	0.645	0.071	0.403***	0.000
Perceived Social Support	-0.337	0.050	-0.289***	0.000

Note:  $\beta =$  Beta Coefficient  
\*\*\* Level of significant is at  $p \leq 0.001$

It was found that among all the variables that were analysed, academic stress happened to be the strongest predictor in the model to influence depressive symptoms among the foundation students as it had the highest  $\beta$  value, which is 0.403, followed by perceived social support,  $\beta = -0.289$ , and sleep quality,  $\beta = 0.258$ .

**Discussion**

This study investigated the predictors of depressive symptoms among the foundation students. In this study, the foundation students reported to have at least experienced mild



depressive symptoms during their journey of studies as indicated by the BDI-II indicators, where the incidences of mild, moderate, and severe depressive symptoms were 33.10%, 23.70%, and 7.40%, respectively. These results are consistent with studies that suggest university students will at least experience depression during their studies (Kappner et al., 2022; Rashid et al., 2021; Ramlan et al., 2020). This study revealed the lower sleep quality of the foundation students would lead to a higher chance of depressive symptoms among foundation students, and the higher academic stress perceived by the student will increase the events of the students to experience depressive symptoms. The past literature supports the finding of this study, students who have sleeping issues and due to a variety of academic challenges in the university have become the significant causes of depression among the students in university (Hossain et al., 2022).

Studies focusing on depression among health science undergraduate students in Malaysia show that the prevalence of depressive symptoms varies from 51.4% to 66.2% (Fauzi et al., 2021). In our study, the prevalence of depressive symptoms is 64.2% among the foundation students, which shows that the foundation students are experiencing depressive symptoms at almost the same rate as the health science bachelor student. The finding reveals the reason behind the higher depressive symptoms projected by the foundation students is due to the academic stress they perceived.

The overwhelming assignments and projects in the university may become one of the reasons students in foundation studies experience academic stress. Foundation students may have not yet adapted to university life compared to high school students' way of life. One of the fear issues among students in the university is fear of the uncertainty of their grades and results in examinations (Hamaideh et al., 2022). This fear of grading might be due to the differences in educational systems between high school and tertiary institutions, as well as the grading schemes that have overwhelmed the foundation students because of the sudden changes from high schools to universities. Also, lack of time management could potentially become the reason for academic stress as foundation students might fail to balance their schedule to meet the due date of assignments and projects, revision, and their leisure time.

Our finding, academic stress predicts depressive symptoms experienced by the foundation students, are similar to the results from Zhang et al (2022), in which a study found that academic stress is an influential factor that could risk students to experience depressive symptoms. Zhang et al (2022) added stakeholders should give more attention to the issues of a long period of high academic pressure among the students as a failure of students to cope with these issues will cause them to feel deep frustration and eventually lead to suicide ideation. Therefore, perceived academic stress should not be taken lightly, as stress due to academics could lead to other potential mental health problems.

## **Conclusion**

In line with our expectations, academic stress potentially causes depression among foundation students in the direct way, while sleep quality and perceived social support among the foundation students shows a relationship with depressive symptoms and these findings are supported from the previous literature.

Overall, academic stress was the most significant predictor of depressive symptoms among the foundation students in Universiti Putra Malaysia. Previous studies indicate that academic-related stress can decrease academic performances and increase the risk of student dropout. This situation can cause a considerable loss to the universities as these students could contribute significantly to future development. To curb this possibility, educators can

help the students to build their soft skills by encouraging them to be involved in study groups and do more than just reading, such as making mnemonics for remembering specific definitions and flashcards to help students retain the information. Furthermore, universities body can invite counsellors to conduct a seminar to guide them on study techniques to obtain effective learning processes and to learn to cope and manage their stress. All in all, universities can focus more on encouraging students to participate in cocurricular activities and lessen their classes scheduled to balance their lifestyle between studying and physical activities to ensure their mental and physical health are in stable manner.

### Limitation

This study has few limitations. Firstly, the data collected to conduct this study are limited to only one university and therefore this study cannot be generalized to other foundation students. Secondly, our study focuses on the cross-sectional design and are unable to perform causal inferences between variables. It is suggested to include both private and public universities and to have large sample size comprises foundation students from different universities to allow more relevant results for future study.

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