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# Stress, Anxiety and Depression of Undergraduate Medical Students in a Public Medical Programme in Malaysia: A Risk Factor Analysis

Effat Omar<sup>1</sup>, Mazapuspavina Md Yasin<sup>2</sup>, Ilham Ameera Ismail<sup>2</sup>, Syahrul Azlin Shaari<sup>3</sup>, Hazlyna Baharuddin<sup>4</sup>, Rosfaiizah Siran<sup>5</sup>

<sup>1</sup>Department of Pathology and Institute of Pathology, Laboratory and Forensic Medicine (I-PPerForM), Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, Selangor, MALAYSIA

<sup>2</sup>Primary Care Medicine, Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, Selangor, MALAYSIA

<sup>3</sup>Department of Medical Microbiology and Parasitology, Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, Selangor, MALAYSIA

<sup>4</sup>Department of Medicine, Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, Selangor, MALAYSIA

<sup>5</sup>Department of Physiology, Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, Selangor, MALAYSIA

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## ABSTRACT

This study aims to investigate the prevalence and factors affecting stress, anxiety, and depression of medical students in a public university in Malaysia. Medical students of years 1 to 5 were invited to answer an anonymised Depression, Anxiety, and Stress Scale-21 (DASS-21) questionnaire. Sociodemographic data were also collected. The results were analysed using descriptive and univariate/multivariate logistic regression analyses. Out of 907 participants, 35.2% reported to having stress, anxiety 43.5% and depression 7.1%. Students in year 1 were more likely to be anxious compared to year 5 [ $\beta$ : 2.059; 95% CI: (1.247, 3.398);  $p = 0.014$ ], and those from B40-families were more likely to be stressed [ $\beta$ : 1.79; 95% CI: (1.183, 2.718);  $p = 0.006$ ] compared to T20-families. Those without psychiatric and medical illnesses had 80% [ $\beta$ : 0.202; 95% CI: (0.69, 0.597);  $p = 0.004$ ] and 34% [ $\beta$ : 0.666; 95% CI: (0.445, 0.994);  $p = 0.047$ ] reduction in stress level, while 86% [ $\beta$ : 0.143; 95% CI: (0.038, 0.535);  $p = 0.004$ ] and 39% [ $\beta$ : 0.614; 95% CI: (0.409, 0.923);  $p = 0.019$ ] had reduction in anxiety levels. In addition, those without psychiatric illness had 91% [ $\beta$ : 0.094; 95% CI: (0.032, 0.275);  $p = <0.001$ ] reduction in depressive symptoms. Those who considered counselling were 1.8 times more likely to be stressed [ $\beta$ : 1.849; 95% CI: (1.367, 2.500);  $p = <0.001$ ] and had anxiety [ $\beta$ : 1.879; 95% CI: (1.387, 2.545);  $p = <0.001$ ]. There is a moderate prevalence of anxiety and stress among medical students, but a low occurrence of depression. Being in year 1, B40 socioeconomic group, having medical and psychological illnesses resulted in a higher risk of stress, anxiety and depression.

**Keywords:** *Medical students, Risk factors, Stress, Anxiety, Depression*

## CORRESPONDING AUTHOR

Effat Omar, Department of Pathology, Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, Jalan Hospital, 47000 Sungai Buloh, Selangor, Malaysia

Email: [effat@uitm.edu.my](mailto:effat@uitm.edu.my)

## INTRODUCTION

Mental health issues have been reported to be more prevalent in medical students compared to the general population (1, 2). The incidence of mental health issues in Malaysians aged 16 years old and above has been reported to be approximately 30% (3). Among medical students worldwide, the prevalence of mental health problems varies with geographical location, with a higher prevalence reported by studies done in Hong Kong (87%) (4) and India (53.3%) (5).

In Malaysia, the reported prevalence of mental health issues among medical students varies from 59.2% to 14.3% (6). This large variation may result from differences in study population, for example, students in various years of study or different cohorts of students, variations in instruments employed to assess the mental health state, or variations in the medical programme's curriculum (7). Consequently, this study aims to investigate the prevalence and factors associated with mental health issues among medical students enrolled in Universiti Teknologi MARA (UiTM) medical programme. This information will broaden the understanding of the topic and help to paint a more complete picture on the prevalence and contributing factors of mental health issues among Malaysian medical students.

## METHODS

This study was performed at Faculty of Medicine, UiTM Sungai Buloh Campus, Selangor, Malaysia. This cross-sectional study was performed between June and August 2019. Medical students of years 1 to 5 in the Faculty of Medicine UiTM were invited to participate in the study. Universal sampling was used, where all students who acquiesced were included. Upon signing the consent form, a study identification number was given to each student. This number was used for data collection and data entry purposes, ensuring the confidentiality of the student. The main name list and assigned identification were kept solely by the principal investigator. This list allowed the identification of students who reported significant distress to allow the provision of mental health assistance.

Students were given forms to capture their sociodemographic data and the Depression, Anxiety, and Stress Scale-21 (DASS-21) questionnaire. The questionnaire comprised 21 items divided into three sections to measure depression, anxiety, and stress. All items were scored using a 4-point Likert scale (e.g. "0 = Did not apply to me" to "3 = Apply to me very much or most of the time"). The requested sociodemographic details included gender, year of study, events/posting occurring during time of the survey, marital status, religion, secondary school education background, pre-university course taken, whether mother and father are still alive, parental marital status, family income, history of psychiatric illness, history of medical illness, and exercise frequency. The family income data collected in this study were categorised based on the Department of Statistics Malaysia (DOSM) 2020 classification of group income brackets which are as follows; B40 = household monthly income of below RM4,850; M40 = between RM5,851 to RM10,970; and T20 = more than RM10,971 (8). The factors selected were based on the investigators' experience in dealings with students with mental health issues in the past.

Descriptive data were analysed for frequency and percentage using the chi-square test, while inferential statistics used univariate/multivariate logistic regression analysis.

## RESULTS

Nine hundred and seven out of a total of 1,080 students (84%) participated in the study. The questionnaire was distributed between 24 June 2019 and 29 August 2019. The respondents' sociodemographic characteristics are presented in Table 1. The prevalence of depression, anxiety and stress based on DASS-21 scores is presented in Figure 1. Briefly, 4.6% and 2.5% had mild and moderate depression respectively, 43.6% had anxiety (11.5% mild, 22.1% moderate, 8.3% severe and 1.7% very severe), and 35.3% were reported to have stress (20.8% mild, 13.7% moderate and 0.8% severe). The students' activities/events/posting at the time of the survey and their DASS-21 scores are presented in Table 2. Post-examination year 1 students reported increased anxiety and stress levels with 59.3% and 43.3% respectively; however, depression remained low (9.3%) (Table 2). Contrarily, the pre-examination students (year 5) reported lower anxiety and stress at 45.4% and 38%, respectively (Table 2).

**Table 1:** Sociodemographic and educational characteristics of the of medical students in the Faculty of Medicine UiTM (n = 907)

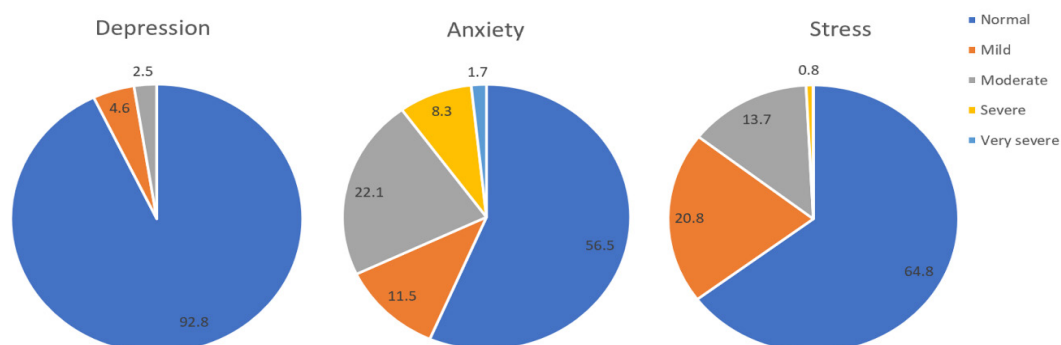
Parameters	Number of respondents (%)
*Gender	
Male	218 (24.1)
Female	687 (75.9)
Year of study	
Year 1	150 (16.6)
Year 2	193 (21.3)
Year 4**	399 (44.1)
Year 5	163 (18.0)
Marital status	
Single	889 (98.3)
Married	15 (1.7)
Religion	
Islam	894 (98.8)
Others/Christian	11 (1.2)
*Education background (Form 1 to 3)	
Government day-school	618 (69.0)
Boarding school (SBP)	186 (20.8)
MRSM	69 (7.7)
Others (private)	23 (2.6)
*Education background (Form 4 to 5)	
Government day-school	487 (54.8)
Boarding school (SBP)	268 (30.1)
MRSM	115 (12.9)
Others (private)	19 (2.1)
*Pre-degree foundation background	
Matriculation	154 (17.1)
Diploma	83 (9.2)
Foundation studies ( <i>Asasi</i> )	664 (73.7)

(Continued on next page)

**Table 1:** (Continued)

Parameters	Number of respondents (%)
<b>*Father had passed away</b>	
No	844 (93.7)
Yes	57 (6.3)
<b>*Mother had passed away</b>	
No	881 (97.7)
Yes	21 (2.3)
<b>*Parent marital status</b>	
Married	778 (87.3)
Divorced	46 (5.2)
Widowed	56 (6.3)
Remarried	11 (1.2)
<b>*Family income</b>	
B40	435 (48.9)
M40	281 (31.6)
T20	174 (19.6)
<b>*Has psychiatric illness</b>	
No	880 (97.8)
Yes	20 (2.2)
<b>*Has medical illness</b>	
No	767 (85.3)
Yes	132 (14.7)
<b>Exercise</b>	
No	535 (59.4)
Yes	365 (40.6)

Note: \*Missing data due to (the subjects’) non-response on the respective sections; \*\*Includes the new year 4 students who had progressed from year 3. SBP = Sekolah berasrama penuh, MRSM = Maktab Rendah Sains MARA



Note: 907 of 1,080 students (84%) participated in the survey (the data is in percentage form)

**Figure 1:** The prevalence of depression, anxiety, and stress in medical students, UiTM.

**Table 2:** Time of conduct of the study, academic event and DASS-21 scores according to year of study

Year of study	Academic event during conduct of the survey	Number of respondents	Depression N (%)	Anxiety N (%)	Stress N (%)
Year 1	After the last paper of semester 2 examination	150	14 (9.3)	89 (59.3)	65 (43.3)
Year 2	At the end of the elective posting	193	10 (5.2)	84 (43.5)	72 (37.3)
Year 4	Junior Y4: Consolidation of basic clinical medicine posting Senior Y4: Third week of last clinical posting	399	24 (6.0)	147 (36.8)	120 (30.1)
Year 5	Last week of the last posting, before the end of posting examination	163	17 (10.4)	74 (45.4)	62 (38.0)

Note: Data presented as number of cases with % of those in at least mild category for each DASS-21 parameters from the total respondents in the respective year in the brackets.

Univariate analysis was performed, followed by multivariate binary logistic regression analysis of the sociodemographic and educational factors surveyed in this study. After conducting multivariate analysis, significant factors were found to be year 1 of study, the B40 income group, history of psychiatric and medical illnesses, and those who considered going for counselling. The details of the significant risk factors and the associated emotional distress are presented in Table 3.

**Table 3:** Multivariate binary logistic regression analysis of sociodemographic and educational factors with depression, anxiety and stress among medical students in Faculty of Medicine UiTM (n = 907)

Factors	Findings	Values
Year 1 compared to year 5	2x more likely to be anxious	$\beta$ : 2.059; 95% CI: (1.247, 3.398); $p = 0.014$
Family income (B40 compared to T20 group)	1.8x more likely to be stressed	$\beta$ : 1.79; 95% CI: (1.183, 2.718); $p = 0.005$
	1.6x more likely to be anxious	$\beta$ : 1.678; 95% CI: (1.133, 2.486); $p = 0.010$
Has NO psychiatric illness	80% reduction in stress level	$\beta$ : 0.202; 95% CI: (0.69, 0.597); $p = 0.004$
	86% reduction in anxiety levels	$\beta$ : 0.143; 95% CI: (0.038, 0.535); $p = 0.004$
	91% reduction in depressive symptoms	$\beta$ : 0.094; 95% CI: (0.032, 0.275); $p = <0.001$
Has NO medical illness	34% reduction in stress level	$\beta$ : 0.666; 95% CI: (0.445, 0.994); $p = 0.047$
	39% reduction in anxiety levels	$\beta$ : 0.614; 95% CI: (0.409, 0.923); $p = 0.019$
Consider counselling	1.3x more likely to be stressed	$\beta$ : 1.353; 95% CI: (1.002, 1.826); $p = 0.048$

## DISCUSSION

This study found that the most prevalent emotional distress among the medical students in UiTM medical programme was anxiety (43.5%), followed by stress (35.2%), and depression (7.1% mild and moderate depression). In keeping with the methodology of this study and to avoid differences in data collected due to the differences in the measuring tool, a short review of literature on mental health of medical students measured using the same instrument (DASS-21) was performed and presented in Table 4.

**Table 4:** The prevalence of depression, anxiety and stress in medical students based on studies utilising DASS-21 as the tool

Country	Year of publication	Depression (%)	Anxiety (%)	Stress (%)	Reference
Malaysia (private university)	2015	60.2	76.2	46.9	(9)
India	2015	51.3	66.9	53	(10)
Saudi Arabia					
Pre-exam		43	63	41	
Post-exam	2015	30	47	30	(11)
Brazil	2017	34.6	37.2	47.1	(12)
Pakistan	2019	57.6	74	57.7	(13)
Malaysia (public university)	2019	31.1	53.9	26	(14)
India					
Pre-pandemic		33.2	21.2	20.7	
During pandemic	2020	35.5	33.2	24.9	(15)
India	2022	68.3	79.9	37.5	(16)
Malaysia (public university)	2024	7.1	43.5	35.2	*

Note: \*Data from this study

This study was performed in 2019; thus, the prevalence of mental distress could be suggested to be a pre-pandemic baseline for the student population. Overall, depression was found to be relatively low compared to other studies, while anxiety and stress were comparable (9–16). When analysed according to proximity to high-stakes exams (students of year 1 and 5), it was found that anxiety level was high for year 1 but interestingly not for year 5 (Table 2), with no difference in stress and depression levels. A study of 575 medical students in Saudi Arabia reported a significant increase of anxiety in the pre-examination compared to the post-examination period, but no significant difference in depression and stress levels (11). Although our study did not measure pre-exam emotional distress, the findings of high level of anxiety and stress at the post exam period are surprising. Another study found similar high anxiety and stress levels in the early years of study compared to the later years of study (12), and they postulated that this could be due to the fear of the unknown as the students begin an unfamiliar journey on their own, away from home and its inherent support (12).

The mental health of medical students was reported to worsen during the pandemic (2, 15, 17). Studies using DASS-21 which compared the mental health of medical students before and during the COVID-19 outbreak showed a marked increase in depression and anxiety (15). As expected, this finding is also true for other tertiary student population (17).

This study found that the factors associated with increased risk of mental distress are being in the early year of the medical programme (increased risk of anxiety compared to year 5), low family income (increased risk of stress), has a history of chronic (increased risk of stress and anxiety), and psychiatric illness (increased risk of all parameters: depression, anxiety and stress). Those who considered going to counselling are more likely to be stressed. The rest of the parameters are non-contributory after multiple logistic regression analysis.

In line with this result, a Brazilian study (12) found that students in the early years of medical programme had an increased risk of anxiety. In addition to the postulation mentioned above, they suggested that this observation can also be due to the nature of the medical course which has overloaded learning, new and complex materials, unfamiliar assessment structure and unaccustomed teaching methods.

Another factor that is significantly associated with anxiety and stress in our students was financial constraints. Other studies reported financial constraints as a risk factor for depression in medical students (9, 18), but not stress and anxiety (9). Another study in India reported no association between family income and medical students' mental health status during the COVID-19 pandemic (15). In our opinion, the finding on the lack of finances being detrimental to a student's mental health is not surprising. In Malaysia, the socioeconomic group is divided into the low-income (B40), middle-income (M40) and high-income (T20) groups (8). The income value cut-offs for the groups differs between the more affluent urban and the rural areas (19). Thus, the students who are in M40 or T20 categories in their home town would find themselves struggling to make ends meet in the city. This would indeed lead to increased anxiety and stress.

It is found that having concurrent chronic and psychiatric illnesses is a significant factor for depression, anxiety, and stress. Others have reported similar findings (20). The medical programme is challenging even for those without any illnesses. Having additional burden of psychiatric and chronic medical ailments would indeed make participation in the programme immensely more difficult; hence, the increased risk of having depression, anxiety and stress. Another factor analysed is the consideration of the students to see the counsellor and it was found that students experiencing stress are more likely to consult with a counsellor. This is good news as it shows the counselling system is favoured by students who require assistance.

Other factors associated with mental or emotional distress as reported by other studies include the female sex (associated with increased incidence of depression, anxiety and stress) (10–12, 21), pressure of living up to family's expectations (causes increased anxiety and stress) (13), and perceived poor support from family members (affecting depression, anxiety and stress) (14). Significant higher prevalence of anxiety and stress was reported during COVID-19 (15), with no change in depressive symptomatology among the students regardless of family income, gender and year of study (15).

One limitation of this study is not exploring the academic aspect of the programme and its relation to the student's mental health. This will be a subject for future studies. In addition, another survey should be conducted to investigate the possible changes in the prevalence of mental distress in the post-COVID-19 era.

## CONCLUSION

There is a moderate prevalence of anxiety and stress among medical students in the Faculty of Medicine UiTM, but a low occurrence of depression. Being in year 1, the B40 group, having medical and psychological illnesses and smoking resulted in a higher risk of stress, anxiety and depression.

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## ETHICAL APPROVAL

Ethics approval was obtained from UiTM Research Ethics Committee (Ref: REC 151/19).

## REFERENCES

1. Rtbey G, Shumet S, Birhan B, Salelew E. Prevalence of mental distress and associated factors among medical students of University of Gondar, Northwest Ethiopia: a cross-sectional study. *BMC Psychiatry*. 2022;22(1):523. <https://doi.org/10.1186/s12888-022-04174-w>
2. Lyons Z, Wilcox H, Leung L, Dearsley O. COVID-19 and the mental well-being of Australian medical students: impact, concerns and coping strategies used. *Australas Psychiatry*. 2020;28(6):649–52. <https://doi.org/10.1177/1039856220947945>
3. Kotera Y, Ting S-H, Neary S. Mental health of Malaysian university students: UK comparison, and relationship between negative mental health attitudes, self-compassion, and resilience. *High Educ*. 2021;81(2):403–19. <https://doi.org/10.1007/s10734-020-00547-w>
4. Chau SW, Lewis T, Ng R, Chen JY, Farrell SM, Molodynski A, et al. Wellbeing and mental health amongst medical students from Hong Kong. *Int Rev Psychiatry*. 2019;31(7–8):626–9. <https://doi.org/10.1080/09540261.2019.1679976>
5. Pal S, Prashant P, Rohilla R. Psychological distress in undergraduate medical students. *Int J Physiol*. 2019;7(3):178–82. <https://doi.org/10.37506/ijop.v7i3.157>
6. Salam A, Yousuf R, Bakar SM, Haque M. Stress among medical students in Malaysia: a systematic review of literatures. *Int Med J*. 2013;20:649–55.
7. Yusoff MSB, Yee L, Wei L, Meng L, Bin L, Siong T, et al. A study on stress, stressors and coping strategies among Malaysian medical students. *Int J Stud Res*. 2011;1(2):45–50. <https://doi.org/10.5549/IJSR.1.2.45-50>
8. Star T. Malaysia's 'new poor' facing a dilemma, study finds. *The Star*. 2022;15 December:Sect. Nation.
9. Fuad M, Nasir B, Qader M, Bakar M, Elnajeh M, Abdullah M. Prevalence and risk factors of stress, anxiety and depression among medical students of a private medical university in Malaysia. *Educ Med J*. 2015;7(2):52–9. <https://doi.org/10.5959/eimj.v7i2.362>



10. Iqbal S, Gupta S, Venkatarao E. Stress, anxiety and depression among medical undergraduate students and their socio-demographic correlates. *Indian J Med Res.* 2015;141(3):354–7. <https://doi.org/10.4103/0971-5916.156571>
11. Kulsoom B, Afsar NA. Stress, anxiety, and depression among medical students in a multiethnic setting. *Neuropsychiatr Dis Treat.* 2015;11:1713–22. <https://doi.org/10.2147/NDT.S83577>
12. Moutinho IL, Maddalena NC, Roland RK, Lucchetti AL, Tibiriçá SH, Ezequiel OD, et al. Depression, stress and anxiety in medical students: a cross-sectional comparison between students from different semesters. *Rev Assoc Med Bras (1992).* 2017;63(1):21–8. <https://doi.org/10.1590/1806-9282.63.01.21>
13. Kumar B, Shah MAA, Kumari R, Kumar A, Kumar J, Tahir A. Depression, anxiety, and stress among final-year medical students. *Cureus.* 2019;11(3):e4257. <https://doi.org/10.7759/cureus.4257>
14. Minhat H, Alawad T. Risks of mental problems among medical students in a public university in Malaysia. *Malays J Med Health Sci.* 2019;15:65–9.
15. Saraswathi I, Saikarthik J, Senthil Kumar K, Madhan Srinivasan K, Ardhanaari M, Gunapriya R. Impact of COVID-19 outbreak on the mental health status of undergraduate medical students in a COVID-19 treating medical college: a prospective longitudinal study. *PeerJ.* 2020;8:e10164. <https://doi.org/10.7717/peerj.10164>
16. Karanjkar S, Chavan S. Prevalence of depression, anxiety and stress levels on DASS-21 scale in medical students of first year odd and even batch at Miraj City – an observational study. *Int J Health Sci Res.* 2022;12(7):41–7. <https://doi.org/10.52403/ijhsr.20220705>
17. Islam MS, Sujon MSH, Tasnim R, Sikder MT, Potenza MN, Van Os J. Psychological responses during the COVID-19 outbreak among university students in Bangladesh. *PLOS ONE.* 2020;15(12):e0245083. <https://doi.org/10.1371/journal.pone.0245083>
18. Roh MS, Jeon HJ, Kim H, Han SK, Hahm BJ. The prevalence and impact of depression among medical students: a nationwide cross-sectional study in South Korea. *Acad Med.* 2010;85(8):1384–90. <https://doi.org/10.1097/ACM.0b013e3181df5e43>
19. Morden Z, Zurairi Ar. Are you actually M40 or T20? It may differ according to where you live. *The Malay Mail.* 2023;6 June:Sect. Malaysia.
20. Peng P, Hao Y, Liu Y, Chen S, Wang Y, Yang Q, et al. The prevalence and risk factors of mental problems in medical students during COVID-19 pandemic: a systematic review and meta-analysis. *J Affect Disord.* 2023;321:167–81. <https://doi.org/10.1016/j.jad.2022.10.040>
21. Gan GG, Yuen Ling H. Anxiety, depression and quality of life of medical students in Malaysia. *Med J Malaysia.* 2019;74(1):57–61.