
Prevalence and Determinants of Depression Among Pre-Clinical Medical Students at IMU

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ABSTRACT

- **Background:** Medical students are exposed to a variety of factors -> negative effect on mental well-being, physical health and academic performance.
- **Objectives:** This study aims to estimate prevalence and identify determinants of depression among pre-clinical medical students at a private medical university.
- **Methods:** Cross sectional study. Participants were 1st or 3rd year in medical school. Prevalence of depression measured using Beck's Depression Inventory(BDI).
- **Results.** Prevalence of depression among the sample was 25.8% (95% confidence interval (CI) 0.2, 0.32). Academic pressure was found to be a strong determinant of depression with an odds ratio (OR) of 3.1 (95% CI: 0.12, 0.80).
- **Conclusion:** Our study corroborated data from previous research: There is a significant prevalence of depression amongst medical students. The most statistically significant determinant of depression was academic pressure. Specific groups such as single, female and international students were most at risk.
- **Keywords:** Depression, pre-clinical medical students, private medical university, Beck's Depression Inventory.

INTRODUCTION

Depression is a major public health concern as it contributes to the global burden of diseases.

According to an article by the World Health Organisation (WHO), depression affects 4.4% of the world's population (284 million people of all ages) and the numbers are gradually increasing. [1] The National Health and Morbidity Survey (NHMS) describes Malaysia as having one of the highest reported incidences of mental health illnesses, drastically increasing since 2011.

KL is one of the states with the highest prevalence of depression at 39.8% [2].

INTRODUCTION

Generally, university students are more prone to depression [3]

- Abrupt environmental change from school to university
- Rigorous selection process
- Sheer volume of content in medical school

Risk factors that can affect student mental health. If left untreated, these factors can progress to the development of a mental disorder.

- Academic pressure
- Insufficient financial support
- Relationship problems

Additionally, sociodemographic factors such as age, gender, ethnicity and education have a major contribution to depression.

JUSTIFICATION OF STUDY

- In order to effectively curb and manage the widespread occurrence of mental health disorders among medical students, it is vital to first understand the prevalence and factors associated with depression among this population of students. [4]
- This will help lead to the development of suitable prevention methods or management plans.

RESEARCH QUESTIONS

- What is the prevalence of depression amongst preclinical medical students?
- What are some of the determinants of depression amongst preclinical medical students?

RESEARCH OBJECTIVES

- **General objective-**

- estimate the prevalence and identify determinants of depression among pre-clinical medical students at private medical universities in Malaysia

- **Specific objectives-**

- estimate prevalence of depression among pre-clinical medical students at IMU

- identify determinants of depression among pre clinical medical students at IMU

HYPOTHESIS

1. **Null hypothesis-** No association between depression and sociodemographic variable(s)
2. **Alternate hypothesis-** there is an association between depression and sociodemographic variable(s)

LITERATURE REVIEW

- Mental well-being tends to be neglected compared to physical health. If this persists, it can progress to major health disorders.
- **Common symptoms of depression include a constant feeling of sadness and a loss of interest in activities that were once enjoyable;** these symptoms can persist for many weeks (and even months). As a result of depression, one can have repetitive **negative thoughts and feelings that can aggravate an individual to morbid actions such as suicide attempts.** [6]

Morbidity (symptoms of disease)

- **The effects of depression can be quite persistent**, even after medical intervention. Common residual symptoms include: sleep disturbances, anxiety, fatigue and sexual dysfunction. [4] [6] Cognitive impairment (decreases attention span that causes memory deficits) not improved by antidepressants; merely elevate mood

Mortality (death rate)

- **Mortality risk is higher among depressed people as the continuous suicidal thoughts may cause one to end their life.** Studies have shown that people with depression have higher mortality compared to people without depression. A 13 year follow up study in the US demonstrates the correlation between depression and mortality, showing that mortality rate was 13% in less severe depression and if it progresses the risk of mortality increases by 0.6%. [7]

PREVALENCE

- The prevalence of depression among students varies from country to country, and also differs between universities. Universities that fall under the public or private sector demonstrated a vast difference in the rate of depression among medical school students.[5] [8] Based on a study in Pakistan, **medical students from private universities experience more stress and depression**, which accounts for about 60%. Whereas public universities had 17% lower prevalence of depression compared to the private sector. [8]
- Some studies mentioned that the occurrence of depression is different between students in pre-clinical years and clinical years, 33.5% and 20.5 % respectively. [9]

DETERMINANTS

- Research exhibits positive **correlation between prevalence of depression and demographic variables** such as age, gender, ethnicity, academic pressure, year of study, relationship status, and financial problem. [7]

STUDY METHODOLOGY

1. **Study design and data collection period**

- Cross sectional study
- 3 days (6/01/21 to 8/01/21)
- Semester 2 (ME220) and 5 (ME119)

2. **Sample size- RAOSOFT Sample size calculator[10]**

- Margin of error- 5%
- Confidence level-95%
- Response distribution- 28% base[9]
- Sample size 181 participants. 20% extra participants added to compensate for bias and non respondents. Final sample size 217 participants.
- 51.4% (221 students) of the total number of students (430) completed the questionnaire

3. **Study instrument- Structured questionnaire divided into 2 parts.**

- Part 1: Sociodemographic variables.
- Part 2: Beck Depression Inventory (BDI)

4. Dependent variable

- Depression.

5. Independent variables

- Current cohort, Age, Gender, Nationality, Ethnicity, Academic well being, Financial Aid and Current Relationship Status.

6. Inclusion criteria

- Students enrolled in the IMU MBBS programme.
- Students currently in Semester 2 or 5.

7. Exclusion criteria:

- Students currently receiving medical treatment or counselling for depression.

8. Study population

- Semester 2 (ME220) and Semester 5 (ME119) medical students in IMU.
- Total number of students in semester 2 and 5 are 200 and 230 respectively.

9. Sampling method

- Convenience sampling.

10. Data collection procedure

- Questionnaire was written out using the Google Forms software. This was then distributed to the Semester 2 and 5 cohorts WhatsApp groups. Students who were willing to participate clicked on the questionnaire link and responded.

11. Data Analysis

- Statistical Package for the Social Sciences (SPSS) (version 27).
- Quantitative variables: mean and standard deviation.
- Qualitative variable: frequency and percentages.
- Inferential statistics: 95% CI. values
- Binary logistic regression was used to estimate the determinants of depression, $p < 0.05$ as statistically significant.

- BDI contains 21 questions, scored from 0 to 63.
- Each question has a score of 0 to 3.
- Cut off points:
 - 0-10: Normal
 - 11-16: Mild mood disturbance
 - 17-20: Borderline clinical depression
 - 21-30: Moderate depression
 - 31-40: Severe depression
 - 41-63: Extreme depression
- To estimate the absence and presence of depression among the respondents:
 - **Students who scored 16 points or less were classified as not depressed and those who scored 17 points or above were classified as depressed.**



RESULTS



Table 1: Respondent profile (N=221)

Sociodemographic variables		Mean (sd)	n (%)
Current cohort	ME119		111(50.2)
	ME220	-	110(49.8)
Age	≤ 20	20.22 (1.43)	135(61.1)
	≥ 21		86(38.9)
Gender	Male	-	92 (41.6)
	Female		129 (58.4)
Nationality	Malaysian	-	171 (77.4)
	International student		50 (22.6)
Ethnicity	Malay	-	19 (8.6)
	Chinese		138 (62.5)
	Indian		39 (17.7)
	Others		25 (11.3)
Financial aid from external organization/ university	Yes	-	60 (27.1)
	No		161 (72.9)
Academic pressure	Yes	-	171 (77.4)
	No		50 (22.6)
Relationship status	In a relationship	-	59 (26.7)
	Not in a relationship		162 (73.3)
Relationship problems	Yes	-	21 (9.5)
	No		200 (90.5)

35.6% of people in a relationship were having problems within the past week of completing the survey.

Table 2 : Prevalence of depression using BDI (N = 221)

Depression	n	%	95% CI (%)
Yes	57	25.8	20.5 , 32.0
No	164	74.2	68.1 , 79.5

Prevalence of depression:

Table 2- Cumulative % of depression

Table 3 : Prevalence of depression among ME119 and ME220 (N = 221)

Current cohort	Depression	n	%	95% CI (%)
ME119	Yes	34	30.6	22.8 , 39.7
	No	77	69.4	60.3 , 77.2
ME220	Yes	23	20.9	14.4 , 29.4
	No	87	79.1	70.6 , 85.6

Prevalence of depression:

Table 3- Prevalence in each cohort

Table 4: Prevalence of depression using BDI (N = 221)

Category	n	%
Normal	127	57.5
Mild Mood disturbances	37	16.7
Borderline clinical depression	23	10.4
Moderate depression	27	12.2
Severe Depression	5	2.3
Extreme Depression	2	0.9

Table 5: Degree of depression amongst the depressed (N= 57 individuals)

Category	n	%
Borderline clinical depression	23	40.4
Moderate depression	27	47.4
Severe Depression	5	8.8
Extreme Depression	2	3.5

Table 6: Determinants of depression using BDI (N = 221)

Variable	Categories	Odds Ratio	95% CI OR	p-value
Current cohort	ME220	1	-	-
	ME119	1.67	(0.90 , 3.07)	0.100
Age	≤ 20	1	-	-
	≥ 21	1.19	(0.64 , 2.20)	0.566
Gender	Male	1	-	-
	Female	1.78	(0.94 , 3.37)	0.076
Nationality	Malaysian	1	-	-
	International student	1.15	(0.70 , 3.27)	0.289

Table 6: Determinants of depression using BDI (N = 221)

Variable	Categories	ODDS RATIO	95% CI OR	p-value
Ethnicity	Others	1	-	-
	Malay	2.30	(0.63 , 8.39)	0.206
	Chinese	0.99	(0.36 , 2.69)	0.993
	Indian	1.09	(0.34 , 3.50)	0.882
Financial aid from external organization/ university	Yes	1	-	-
	No	1.05	(0.53 , 2.09)	0.870
Academic pressure	No	1	-	-
	Yes	3.10	(1.25 , 7.77)	0.015
Relationship status	In a relationship	1	-	-
	Not in a relationship	2.00	(0.93 , 4.28)	0.073
Relationship problems	No	1	-	-
	Yes	1.18	(0.74 , 4.84)	0.181

DISCUSSION

- **University Putra Malaysia (UPM):**
 - Prevalence of depression was 35.9% (compared to 25.8%).
 - Females, those with academic pressure, and Malay ethnicity were more likely to be depressed.
- **Other studies:**
 - US study: Prevalence of depression was 15.2%.
 - Indian study: Prevalence of depression was 49.1%.
 - Malaysian study: Prevalence of depression was 60%.

RECOMMENDATIONS

1. As the prevalence of depression among pre-clinical medical students is significant, there should be an increase in health education and promotion about depression. This helps increase awareness amongst students.
2. Further research needs to be conducted regarding depression in medical students. This helps gain a better understanding of the issue.
3. Increase student mentor interaction with students, to help check up on students. Especially during exam time.

LIMITATIONS

1. Due to COVID-19 restrictions, a physical interview was not possible. We had to use a questionnaire instead.
2. Used a self-reported scale to assess depression, this can be subject to individual interpretation of the words.
3. Our sample was limited to one private medical university in Kuala Lumpur. So, our findings can't be generalised to all preclinical medical students in Malaysia.

CONCLUSION

1. Depression is a severe mental disorder that shouldn't be taken lightly.
2. Prevalence of depression among pre-clinical medical students in IMU was found to be 25.8% (95% CI = 20.5,32.0).
3. Found that those experiencing academic pressure, single relationship status, females, and international students were all at a higher risk of developing depression.
4. Further research should be conducted about this issue, so that effective interventions can be employed.

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